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A SURVEY OF POLIOVIRUS NEUTRALIZING ANTIBODY IN NEWFOUNDLAND, 1959-60*

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INTRODUCTION

DURING THE Newfoundland epidemic of type 1 poliomyelitis, which started in the summer of 1959, a total of 139 paralytic cases were reported up to January 1960. Previously, only one authenticated epidemic had been recorded on the island, in the year 1953, also due to type 1 poliovirus. Prior to 1953, sporadic paralytic poliomyelitis cases had been reported almost every year since World War I.

The occurrence of two epidemics of paralytic poliomyelitis in the past seven years indicates that a shift has occurred in the epidemiological pattern of poliovirus in Newfoundland. This change may have been caused by (a) variation in the nature of the virus or viruses prevalent in the populations, or (b) alteration in the immune status of the population (natural or otherwise), and (c) changes in ecology of the population affecting the spread of virus.

In North America, a higher incidence during the past several years of paralytic disease due to poliomyelitis has been noted in the pre-school age group and in populations of lower socio-economic status. It has been suggested that this may be due to a change in the prevalent strain of virulent poliovirus. However, this does not take into account the increased immunity of the population resulting from Salk vaccination. Thus the Salk vaccination program in Newfoundland and elsewhere has selectively immunized the school-age populations who have in the past constituted the group from which many paralytic cases have been usually observed. In fact, the recent resistance displayed by these children may be one measure of the effectiveness of Salk vaccination. As a result, however, unvaccinated pre-schoolers have tended to become the most susceptible members in many North American communities.

In Newfoundland in 1959-60, a similar situation was noted, in which the greatest number of paralytic cases occurred in children under the age of 4 years. This may have been partially due to the fact that the Salk vaccination program of the previous year was concentrated in the school age groups. Of greatest interest, however, is the fact that in the only other recorded epidemic, that of 1953, the majority of paralytic cases were also in the pre-school age group. Therefore, even before Salk vaccine had come into use, a trend was developing in Newfoundland where children under 4 years of age were the most vulnerable section of the population.

Infantile epidemics of poliomyelitis usually occur in areas where the majority of the older population have been immunized by infection with previously hyperendemic virus.[1] Such a shift in age group susceptibility has recently taken place in tropical countries consequent upon the advent of improved public sanitation programs. In the tropics it has been asserted that the infantile group has become more susceptible because there is less opportunity for early active immunization through naturally acquired poliovirus infection during the interval while maternal antibody continues to protect the infant.

Notable island poliomyelitis outbreaks in tropical areas with greatest incidence in the infantile population have been described by McFarlan, Dick and Seddon,[2] for Mauritius; while Galea[3] published accounts of an outbreak in Malta. The tropical poliomyelitis pattern in South Africa has been described by Gear,[4] who noted that Negroes had a higher proportion of sero-immunes, and most cases therefore occurred in the white population. He also indicated that poliovirus was hyperendemic and widespread by demonstrating virus in populations or in sewage during inter-epidemic seasons. In areas of this type, serum surveys usually detect high levels of antibody to all three poliovirus types in the younger age groups.

In so-called "virgin-soil" areas where no previous history of poliomyelitis cases or epidemics could be obtained and where the population was presumed to be seronegative from lack of natural exposure to poliovirus, the greatest number of paralytic cases

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occurred in young adults. Although all age groups were affected to some extent, the highest attack rate occurred in the second and third decades of life. Explosive outbreaks of this type have occurred on St. Helena,[5] in French Oceania,[6] and in the Canadian Arctic.[7] These epidemics were of short duration and exhibited high paralytic attack rates.

It would appear that the Newfoundland epidemic is suggestive of a tropical pattern rather than that peculiar to a "virgin-soil" area. Bearing these points in mind, it was felt that an antibody survey in "non-Salk-immunized" persons might reveal a high degree of immunity from natural infection due to endemic virus.

Accordingly, in the summer of 1959, a polio-antibody survey in Newfoundland was conducted on non-Salk-vaccinated individuals in an attempt to ascertain to what extent the natural spread of wild poliovirus in the population was contributing to the immunization of the various age groups. There was special interest in the extent of acquisition of type 2 virus antibody from natural infection, both as an index of the degree of dissemination of poliovirus on the island, and because the possession of type 2 antibody may confer a degree of protection against paralysis by heterologous poliovirus.[8, 9]

Information on the extent of poliovirus infection, as reflected by possession of antibody, would be a valuable guide in predicting the age groups likely to be most vulnerable in a future epidemic. Steps could therefore be taken to concentrate vaccination programs in these low-antibody age groups.

METHODS AND RESULTS

Through the co-operation of Drs. L. Miller, J. Davies, D. Severs, and colleagues of the Newfoundland Department of Public Health and Welfare, the laboratory received over 400 serum samples, from non-Salk-immunized persons. These sera were collected from different areas of the island, from Cottage Hospital admissions, penitentiary inmates, well-baby clinics, poliomyelitis cases admitted to several St. John's hospitals and contacts of poliomyelitis cases. The number and age distribution of persons from whom these sera were obtained are shown in Table I. These have been divided into two groups, those in the immediate focus of the epidemic (Avalon Peninsula), and those taken from communities to a varying extent remote from the focus (outside Avalon Peninsula).

All sera, packed in dry ice, were shipped from Newfoundland to the Dalhousie University laboratory. They were stored in screw-capped tubes at −23°C. until used. Immediately before the neutralization test they were inactivated at 56° C. for 30 minutes.

For testing, all sera were made up in two dilutions: 1:4 and 1:16 in Hanks' solution,[10] containing 0.5% lactalbumin hydrolysate (Hanks La). Two monkey kidney monolayer cultures in screw-capped tubes were used at each serum dilution against each of the three strains of virus. The medium supporting the cultures was replaced with 0.8 ml. of Hanks La solution; 0.1 ml. of the appropriate serum dilution was then added, and then followed by the addition of 0.1 ml. of poliovirus inoculum. The titre of the poliovirus used was from 100 to 300 tissue culture infective doses 50% (TCID 50) per inoculum. The strains tested were Mahoney, type 1; MEF_1, type 2; and Saukett, type 3. The neutralization test cultures were incubated at 37° C. for four days and read; the results are given in Fig. 1.

TABLE I.—AGE DISTRIBUTION OF PERSONS RESIDING WITHIN AND WITHOUT THE AVALON PENINSULA OF NEWFOUNDLAND FROM WHOM SERUM WAS COLLECTED

Age	*Avalon Peninsula*	*Outside Avalon*	*Total*
1	9	2	11
1 - 4	32	8	40
5 - 9	27	28	55
10 - 14	16	23	39
15 - 19	18	21	39
20 - 24	24	26	50
25 - 29	25	36	61
30+	29	8	37
Total	180	152	332

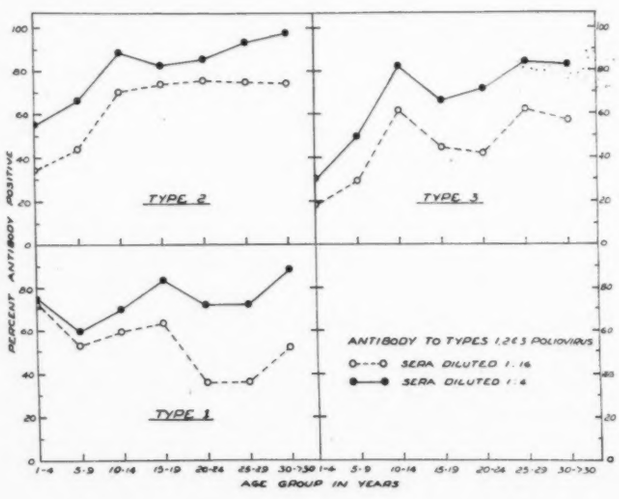

Fig. 1

Fig. 1 shows the percentage of the population, divided into age groups, that have antibodies to types 1, 2 and 3 poliovirus. The results are presented in two ways. First is plotted the percentage of those within an age group whose sera contain demonstrable antibody after being diluted 1:4, and secondly, those whose sera may be diluted 1:16 or more and still neutralize poliovirus. This procedure was adopted to obtain an estimate of the rate of decay of antibody with progressively increasing age in the entire population. Thus, a comparison of antibody acquisition curves plotted for the three different types of poliovirus in the younger age groups, reveals that the patterns obtained for types 1 and 3 are similar, but that for type 2 is different.

In the case of type 1 virus, the influence of the epidemic in infants is reflected in the relatively greater proportion of individuals showing the higher levels of antibody to this virus in the age group below 10 years. The graphs indicating the proportion possessing antibody to types 1 and 3 show a consistently marked decrease between the ages of 20 and 30 years. This response could be interpreted as representing a decline in antibody level in the general population owing to lack of intervening reinfection with types 1 and 3 virus. Beyond 30 years of age it would appear that a secondary rise in antibody level takes place, suggesting that either reinfection has occurred in this group or that an old poliovirus epidemic was responsible for this finding. In the case of type 2 virus, there is no fall-off in the proportion of individuals with antibody at higher levels, which may be indicative of a relatively high degree of endemicity.

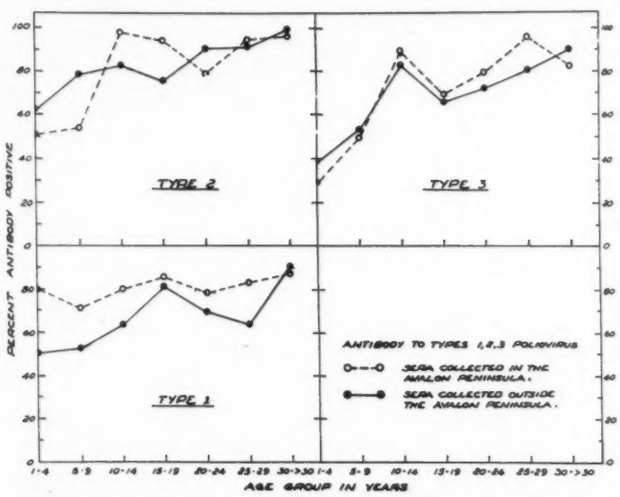

Fig. 2

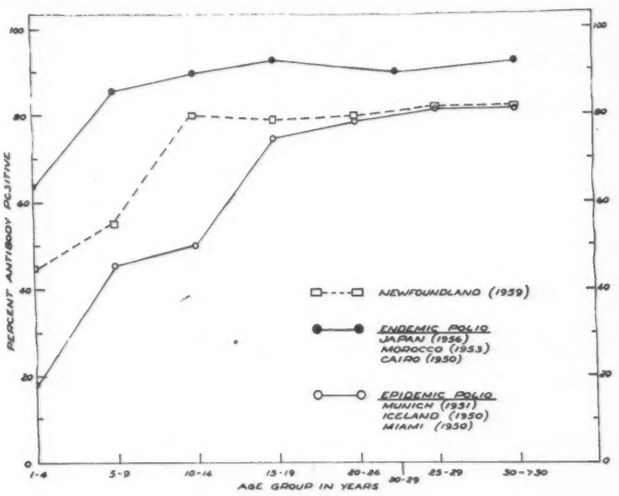

Fig. 3

Fig. 2 shows the proportion of individuals with antibody to types 1, 2 and 3 poliovirus in increasingly older age groups. The results are divided according to those sera collected from the epidemic area (Avalon Peninsula) and those taken elsewhere, remote from the epidemic. A comparison of the two groups shows that the figure representing the type 3 antibody age distribution curve is similar both within and without the 1959 epidemic area. This figure indicates that the proportion of people with type 2 antibody, below 10 years of age, residing on the Avalon Peninsula, is lower than that found in a comparable group living outside the epidemic area of the peninsula. This may reflect a diminished natural infection rate in the Avalon Peninsula itself, an area of modern public sanitation. The 1959-60 epidemic of type 1 poliovirus is reflected in the graph representing type 1 antibody prevalence.

In Fig. 3, the composite results of sero-surveys conducted in areas of the world where poliovirus is hyperendemic — Japan, French Morocco, Cairo[11-13] — are compared with surveys in countries with superior sanitation and lower population density, where poliomyelitis is epidemic — Iceland; Miami, U.S.A.; Munich, Germany.[14] These surveys were conducted on the assumption that a 1:10 dilution of serum, if positive, was considered a significant level of type 2 antibody. In turn, the Newfoundland results at a 1:10 dilution are shown. A comparison of these curves shows that the plot of antibody incidence in Newfoundland is intermediate between the two.

Table II shows the percentage of sera containing poliovirus antibody from children of a comparable average age, as grouped by clinical and geographic criteria. There are two broad groups: those within the epidemic area of the Avalon Peninsula, which are subdivided into paralytic cases, contacts and those with no known contact; and a group from outside the Avalon Peninsula with no known history of contact. In the sera taken from persons in remote areas, there is an overall lower percentage of triple negatives mainly due to a higher incidence of type 2 antibody incidence with ascending age as seen in Fig. 2. If it is assumed that the sera lacking types 2 and 3 antibody in the paralytic poliomyelitis cases were triple negative before the onset of their type 1 infection, it is apparent that the triple antibody negative percentage in the epidemic area lies between 34% and 38% in the groups tested. By comparison, results outside the Avalon Peninsula show an incidence of 19% triple antibody negative.

DISCUSSION

During the past decade there has been a change in the endemic type 1 poliovirus-host relationship in Newfoundland. This has been made manifest by two severe type 1 paralytic epidemics occurring within a period of eight years, in an island with no previously recorded large epidemics. Both epidemics have been infantile in character, differing from other areas in Canada experiencing epidemics

TABLE II.—POLIOVIRUS ANTIBODY SPECTRUM OF CHILDREN LESS THAN 11 YEARS OLD AS GROUPED BY CLINICAL AND GEOGRAPHIC CRITERIA

Group	Number of sera	Average age	% antibody positive 1:16 Type 1	Type 2	Type 3	Triple negative %
Avalon Peninsula:						
Poliomyelitis	33	5.3	100	57	34	0*
Contacts of poliomyelitis cases	14	5.5	72	78	64	7
No known poliomyelitis contact	31	5.2	42	55	50	34
Outside Avalon Peninsula:						
No known poliomyelitis contact	37	5.5	48	76	49	19

*Those having only type 1 antibodies in this group amount to 38%.

during the same decade.[15] The infantile character of the 1953 epidemic, prior to Salk vaccination, suggests that other factors besides vaccination may have been responsible for the age distribution of the recent outbreak.

It is possible that seeding of an especially virulent type 1 poliovirus strain in a susceptible population may have resulted in severe paralytic disease in epidemic form. The infantile character of these epidemics suggests that subclinical infection, with a relatively high degree of enterovirus transmission, has been present for many years. This would confer protection on the older age groups. It is also possible that an endemic, attenuated type 1 poliovirus strain was replaced by a more virulent sub-strain, which in recent years paralyzed more individuals in the group containing the highest number of susceptibles (the age group 1-6 years).

Exposure to type 2 poliovirus has apparently been considerable in the past. Although possibly reduced by improvements in public hygiene on the Avalon Peninsula, it persists at a higher level in other parts of the province (Table II). This is pertinent to the problem of explaining the distribution of paralytic cases in Newfoundland because of the degree of cross-protection shown between pre-existing type 2 antibody and the paralytic effects of succeeding type 1 infections.[8, 9] Type 2 antibody can also show an anamnestic rise after recent infection with type 1 virus.[16] It would be interesting to speculate to what degree the protection against paralysis enjoyed by contacts on the Avalon Peninsula, and by persons outside the Avalon Peninsula, is due to the demonstrated high proportion with type 2 antibody in these groups.

The acquisition of type 2 antibody by natural infection rises rapidly to a peak of 80% to 90% from infancy to age 10 years (Fig. 1). It is possible that recent improvements in general living standards and sanitation have rendered more difficult the early contact with a naturally attenuated type 2 virus, in the age group 2-4 years on the Avalon Peninsula. This, possibly in conjunction with a newly seeded virulent type 1 poliovirus, would partially explain the recent paralytic epidemics in these children who formerly received some measure of natural immunization. This would be difficult to prove owing to the lack of a comparable and sensitive virulence test for various strains of poliovirus, aside from the monkey neurovirulence test. It is probable that Newfoundland is now in a transitional phase (Fig. 3) in which a former state of widespread virus transmission, with early childhood infection, has been replaced by a condition in which natural infection is being deferred to older ages.

In its historic past the island population has had less chance of being seeded with virulent type 1 virus, since the main contacts were by boat. Opening of an international air terminal during World War II, and other means to facilitate commerce, may have aided in changing the local viral ecology. In recent years the development and expansion of consolidated school systems may, by the same token, have aided the dissemination of a virulent strain in epidemic form. The natural isolation of Newfoundland villages on the coast and in the interior is rapidly becoming a feature of the past, bringing with it some mixed blessings.

If it is assumed that poliovirus antibody, as measured in this survey in non-vaccinated persons, represents naturally acquired subclinical infection, then a partial explanation of the epidemiology of the recent paralytic poliomyelitis epidemic in Newfoundland is obtainable. The effect of Salk vaccination with focus on the school age group here, as elsewhere in North America, has served as a dual protection for the older children. With lesser opportunities for spread of virus in Newfoundland owing to improved public health services, there has been correspondingly less opportunity for exposure to natural immunizing infection in early childhood. Thus a susceptible infant group has been built up, providing fertile soil for a severe paralytic poliovirus epidemic.

SUMMARY

The results of a survey of poliovirus neutralizing antibody of all three types in 332 non-vaccinated persons in Newfoundland are presented. The results indicate a surprisingly high degree of natural antibody acquisition in older age groups relative to population density. It is suggested that, along with Salk vaccination in school age groups, this has been one factor in determining the "infantile" character of the 1959-60 type 1 poliomyelitis epidemic in Newfoundland. The possibility of seeding of a type 1 poliovirus of increased virulence during the past decade, and the association of type 2 antibody with protection against paralysis by type 1 poliovirus, is also discussed. Newfoundland may now be passing through a transitional phase in which previously widespread virus infection during early childhood, with resulting immunity, is

being replaced by a new situation where natural immunity is deferred until slightly older ages are reached.

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OVARIAN SURGERY WITH LOSS OF CORPUS LUTEUM IN EARLY PREGNANCY

REPORT OF TWO CASES BROUGHT TO TERM WITH PROGESTIN (DELALUTIN*) THERAPY

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THE DISCOVERY of ovarian tumours in the pregnant patient is relatively uncommon but of potentially serious significance. Hesitation to perform the indicated pelvic laparotomy for fear of inducing abortion is likely to present a greater risk to fetal survival and maternal well-being than the operation itself.[1] The difficulty of accurate diagnosis of the nature of the mass, the frequency of malignant tumours, and the twisting of the affected ovary on its pedicle with necrosis or subsequent complication of delivery establish the need for early removal of solid or cystic neoplasm.[1-4] Dermoid cysts, which constitute approximately 10% of all ovarian tumours,[4] are particularly disposed to producing torsion of an ovary,[1] and immediate extirpation is imperative with the suspicion or diagnosis of a twisted dermoid. There are occasions when the encroachment of a cystic neoplasm or the finding of malignancy demands unilateral or bilateral oophorectomy or salpingo-oophorectomy with loss of the corpus luteum of pregnancy or all normally functioning ovarian tissue. Management of the patient under these conditions is an important factor in the eventual outcome of pregnancy.

When the corpus luteum is unavoidably lost in the early stages of gestation, the maintenance of adequate progestational activity to secure the continued growth and development of the fetus would appear to be indicated until placental support is well established. A postoperative program of progestin therapy can contribute to the preservation of pregnancy, complicated by cystectomy or oophorectomy within the first trimester, to a successful termination.[5-7] It is generally assumed that placental production of progesterone is initiated after approximately 90 days of pregnancy and that the dangers of abortion thereafter are not very substantial. In the interest of objectivity, however, it must be noted there are clinicians who believe that placental function begins much earlier in pregnancy and that there is little risk of spontaneous abortion even with the removal of the corpus luteum during the first trimester of gestation.[3] There are reports in the literature of patients who were carried to term following bilateral oophorectomy without the benefits of an exogenous supply of progestational hormone. Nevertheless these are presented as an unusual experience and it would be difficult to estimate from the literature the frequency with which pregnancy fails to survive this complication since abortion represents an anticipated consequence and is not likely to be reported. The administration of progestin to patients in early pregnancy is advocated as a precautionary measure which affords the fetus a maximum opportunity for survival.

Two cases are presented in this communication in which operation for removal of ovarian cysts entailed loss of the corpus luteum at approximately six weeks and at eight to 10 weeks of pregnancy. Postoperatively, the long-acting progestational agent, 17-alpha-hydroxyprogesterone caproate (Delalutin), was regularly administered for 2 to 2½ months when the fetal heart was clearly heard and pregnancy was found to be advancing normally. Supportive therapy was then discontinued. Unlike free progesterone, hydroxyprogesterone caproate may be given in relatively infrequent injections to simulate the action of the corpus luteum.[6, 8-10] Because of the prolonged biological activity of the ester, a schedule of daily injections to maintain adequate hormone levels is no longer necessary. While the 19-nortestosterone compounds employed for their progestational action have been found to exert a distinct androgenic effect,[8] implicating these substances as a possible cause of virilization of the

*Delalutin (17-alpha-hydroxyprogesterone-17-n-caproate) is a product of E. R. Squibb & Sons of Canada, Ltd.
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fetus, hydroxyprogesterone caproate has not been associated with physical abnormalities in the female infant.[9] The present experiences indicate that the caproate compound is a convenient and potent source of progestational activity, protecting pregnancy at a critical stage in development and advancing it to the point where placental secretion of hormone was established, without adverse effects on the physical status of mother or infant.

Cystectomy with Excision of the Corpus Luteum

Case 1.—The patient was 27 years old and gravida 2. She had not menstruated for two years prior to the present pregnancy but had successfully conceived and had been delivered of a normal child within this period. No difficulties were encountered during the earlier pregnancy or delivery. This time, however, having intimated that she considered herself pregnant again, she complained of severe pain confined to the right side of the abdomen. Pelvic examination showed the uterus to be enlarged to approximately the size of a six-week gestation. The cervix was soft and there was a mass in the right fornix which was extremely tender and suggestive of an extrauterine pregnancy. The enlargement of the uterus was considered compatible with that of an ectopic pregnancy.

The patient was admitted to hospital but her condition failed to improve. There was some element of shock, and a diagnosis of possible ectopic pregnancy was made with provision for immediate pelvic laparotomy. Operation established the presence of a cyst of the right ovary, 3.5 cm. in diameter, containing blood as well as a corpus luteum of pregnancy. The corpus luteum protruded into the cyst, communicating with it and extending partly into the ovary. It was impossible to save the corpus luteum of pregnancy and it was excised together with the cyst to which it was firmly attached.

Since the pregnancy was in its very early stages, progestin therapy was considered to be a judicious measure following operation. Initially, 125 mg. of hydroxyprogesterone caproate (Delalutin) was given by the intramuscular route daily for a period of seven days. Thereafter, injections were given every other day for seven days and then once weekly up to the fourth month of gestation. Throughout this time, the patient was well and there did not appear to be any disturbance of pregnancy. Progestin therapy was then discontinued.

Seven months after laparotomy, the patient was admitted to the hospital in early labour and was delivered on the following morning of a normal viable female infant, fully mature and weighing 6 lb. 4¼ oz. Delivery was effected with forceps because of transverse arrest with failure of the head to rotate and deliver itself spontaneously. The infant responded at once to resuscitation. According to the delivery date, the period of gestation was not prolonged by the hormone therapy nor did the infant appear to be unduly long or thin. Occasionally, when progesterone is given during pregnancy, the period of gestation may be prolonged somewhat or the infant appear thinner and longer than usual. Neither of these manifestations was present in this case and both mother and infant showed no adverse effects of a complicated pregnancy.

Oophorectomy for Removal of Bilateral Dermoid Cysts

Case 2.—This patient, a white woman, 23 years of age, was first seen when she was six weeks' advanced in pregnancy. At that time she was well and pelvic examination confirmed the stage of gestation. At examination it was noted that the right ovary was larger than warranted by a normal corpus luteum of pregnancy and she was advised to report regularly for prenatal surveillance.

At approximately the tenth week of gestation, she complained of severe abdominal pain accompanied by nausea and vomiting. Her pulse rate was 100 beats per minute and her blood pressure was 86/40 mm. Hg. Careful examination failed to reveal the presence of intraperitoneal bleeding, and ectopic pregnancy was therefore considered unlikely. Pelvic examination indicated a large cystic mass in the cul-de-sac and in view of the previous pelvic findings, a diagnosis was made of ovarian cyst with torsion of the pedicle.

The patient was immediately hospitalized and laparotomy was undertaken the following day. The abdomen was opened through a mid-line, sub-umbilical incision. The uterus was delivered into the wound and was seen to be normal and in the eighth to tenth week of gestation. Both ovaries were cystic and impacted in the pouch of Douglas. The right ovary was completely replaced by cystic change and rotated one and one-half turns on its pedicle, with early resultant necrosis. The left ovary was similarly affected but retained a small portion of normal tissue in which was noted the corpus luteum of pregnancy. The cystic right ovary was completely removed. An attempt was made to exercise the cyst involving the left ovary. It was not possible to save the corpus luteum and this was also removed. The residual portion of ovarian tissue was less than 1 cm. in diameter and did not contain any luteal elements. No ovarian tissue was left on the right side.

Following operation, the patient was given a daily intramuscular injection of 125 mg. hydroxyprogesterone caproate (Delalutin) for six consecutive days. She made a good recovery and was allowed home seven days after operation. For the next month, she was given 125 mg. of the progestin twice weekly and the uterus continued to enlarge. Frequency of injection was then reduced to once weekly and after two weeks it was entirely discontinued when the fetal heart became audible. Pregnancy advanced uneventfully to term and the patient was delivered of a normal female infant seven months after operation. As in the previous case, the period of gestation was not prolonged by hormone treatment and the infant was normal in every respect. Neither mother nor infant exhibited adverse effects as a consequence of progestin therapy.

The ovarian tumours excised in this case were found to be dermoid cysts. There was no evidence of malignant involvement and the surgery and subsequent delivery were followed by complete recovery.

Comment

Until placental function is well established, the corpus luteum of pregnancy is the essential source of the progestational activity which sustains gestation and encourages the continued growth and development of the fetus. When emergency opera-

tion in the early stages of pregnancy entails an unavoidable loss of the corpus luteum, it seems a judicious precautionary measure to assure an exogenous supply of progestational hormone during the critical period prior to onset of placental production of progesterone. The use of free progesterone for this purpose is hampered by the need for daily injections and, on occasion, unusually high dosage to initiate and maintain satisfactory hormone levels. With the long-acting ester, 17-alpha-hydroxyprogesterone-17-n-caproate (Delalutin), intramuscular injection of 125 mg. daily during the first week after operation builds up a reservoir upon which the patient may draw so that subsequent treatment requires one or, at most, two injections weekly. When the fetal heart beat becomes audible, therapy may be discontinued. This program of progestin therapy has been found a satisfactory replacement for the lost corpus luteum hormones and has not produced adverse effects on the physical status of either mother or infant. Its use has not been associated with prolongation of the gestation period. Moreover, thus far, there have been no reports of an increased incidence of masculinization of the female infants born of mothers treated with hydroxyprogesterone caproate during pregnancy. The female infants of the patients described in this report were normal in all respects. For these reasons, hydroxyprogesterone caproate is considered a useful progestational agent for protection of pregnancy.

SUMMARY

Two cases are presented in which ovarian surgery with loss of the corpus luteum of pregnancy complicated the early stages of gestation. Both patients were brought to term with delivery of normal, viable, fully mature infants by the administration of progestin therapy in the critical postoperative period prior to the establishment of full placental function. The long-acting progestational agent, 17-alpha-hydroxyprogesterone-17-n-caproate (Delalutin) simulated corpus luteum activity, supporting gestation and stimulating the continued growth and development of the fetus pending placental assumption of progesterone production. There were no adverse effects of treatment on mother or infant. The usefulness of the caproate compound lies in its prolonged biological activity which enables the building up of a reservoir of progestational activity upon which the patient may draw as necessary. Maintenance of hormonal effects requires one or two injections weekly instead of the daily administrations which limit the efficiency of free progesterone.

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BRACHYMETACARPAL DWARFISM OR PSEUDO-PSEUDOHYPOPARATHYROIDISM WITH MENTAL DEFECT IN SIBLINGS

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BRACHYMETACARPAL dwarfism or pseudo-pseudohypoparathyroidism is a rare condition characterized essentially by short metacarpals and reduced stature, features shared in common with pseudohypoparathyroidism. The latter was believed by Elrick et al.[1] to arise from mutation of a gene controlling several traits. Elrick and his colleagues suggested that three separate disturbances were involved, and described the following: failure of the parathyroid end-organ to respond to parathyroid hormone, ectopic ossification in the soft tissues, and dyschondroplasia. In the first disturbance, in which the renal tubule is resistant to the effects of parathormone, failure to decrease the reabsorption of phosphorus, with resultant upset of calcium-phosphorus balance, leads to hypocalcemia with its attendant train of symptoms. These include the various manifestations of tetany. The patient may complain merely of tingling sensations in the extremities, or muscle cramps, stiffness and fatigue. Twitching of muscles, carpopedal spasm or laryngospasm may occur. A positive Chvostek sign has been reported in rather more than half and a positive Trousseau sign in rather less than half the cases. Frame and Carter[2] stressed the occurrence of frank convulsions in two-thirds of recorded cases of pseudohypoparathyroidism. They noted that these were for the most part typical grand mal seizures, with an age of onset varying from two weeks to eighteen years. Trophic changes may be present. The skin may be dry, rough and scaly and the nails brittle and thickened. The hair of the scalp may be coarse and sparse and there may be loss of eyebrows and eyelashes. Lenticular opacities have been noted in some and the teeth may exhibit transverse ridging or they may fail to erupt. On biochemical examination values of serum calcium and serum phosphorus are found to be similar to those in idiopathic hypoparathyroidism. In their review of 25 cases of pseudohypoparathyroidism, Frame and Carter found a range of serum calcium from 4.3 mg. % to 9.2 mg. %, with an average serum level of 6.8 mg. %, compared with a normal range of 9 to 11 mg. %. They similarly noted a range of serum phosphorus from 4.2 mg. % to 11.1 mg. %, with an average serum level of 7.5 mg. %, compared with normal values of 2 to 4 mg. %. Radiologically, bone density is usually normal or even slightly increased, although a number of cases have been recorded with skeletal demineralization. Calcification is commonly present in the basal ganglia, either in punctate fashion or as radiating striations.

Deposition of calcium in the soft tissues is commonest in the neighbourhood of joints, and the pathology includes actual bone formation as well as the laying down of subcutaneous nodules or plaques of calcium. Subcutaneous ossification has occasionally been noted at birth; in other cases it has made its appearance considerably later in life. Ossification may also take place in bursae and muscles.

The dyschondroplasia of pseudohypoparathyroidism is characterized by short, thick-set stature, rounded facies and anomalies of the metacarpals and metatarsals. The latter become manifest as abnormal shortening of one or more of the fingers or toes. Fingers are most commonly involved. In their review, Frame and Carter noted that in 13 cases at least one finger was abnormally short, whereas in three cases abnormally short toes were present in addition to the short fingers. Metacarpals I, IV and V, and metatarsals I and V are chiefly affected. These bones are disproportionately short and are often wider than normal. Occasionally the phalanges are shortened and widened. Further features sometimes present include bowing of the fibula, spur formation on the tibia, coxa valga and widening of the medullary cavities of the long bones.

In most cases of pseudohypoparathyroidism the occurrence of intellectual retardation has been mentioned. Frame and Carter observed evidence in a number of cases that intellectual retardation had existed from infancy and that in others it had clearly antedated the onset of seizures. MacGillivray[3] observed that intellectual retardation had been present in 21 of 22 cases where the mental state had been remarked upon.

The term pseudo-pseudohypoparathyroidism was first applied by Albright, Forbes and Henneman[4] to a patient with dyschondroplasia and ectopic ossification alone. The patient had all the appearance of pseudohypoparathyroidism save that there were no biochemical manifestations indicating hypoparathyroidism, such as tetany, hyperphosphatemia or hypocalcemia. Initially the terms suggested were a-hyperphosphatemicpseudohypoparathyroidism, or a-hypocalcemicpseudohypoparathyroidism, but finally pseudo-pseudohypoparathyroidism was decided upon. Since then additional cases have been described, and recently Van der Werff ten Bosch[5] reviewed a total of 14 cases in the literature, including a number of his own. In only three instances did he find subcutaneous calcinosis or ectopic ossification, from which he concluded that this feature was not an essential feature of pseudo-pseudohypoparathyroidism. On the other hand, peculiarities common to all cases were reduced stature and shortness of the lateral metacarpals.

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Van der Werff ten Bosch considered that the term should be reserved for patients of short stature, with shortness of the lateral metacarpals but without tetany. Noting the frequency of menstrual disorders he was also inclined to believe that gonadal dysgenesis might sometimes be associated with the syndrome.

The following three sisters with reduced stature, metacarpal shortening and mental defect were admitted to the Manitoba School in 1926.

CASE 1.—This patient, aged 50 years, was the eldest of the sisters. Little is known of the family history. Both parents were born abroad and both died of influenza during the 1919 pandemic. The paternal grandparents were said to have been of normal physical and mental health. Nothing is known of the maternal grandparents. A paternal aunt and three cousins were reported to be normal physically and mentally. In the patient's own family a fourth sister was believed to have been of subnormal intelligence. The patient herself was cared for in a public institution until 1926. In that year, at the age of 16, she was admitted to the Manitoba School. The remaining sibling, an apparently normal brother, escorted the patient and her two sisters when they were admitted. He was unable to supply information about their early development beyond the fact that they had been retarded from infancy and had not been able to benefit from schooling.

Physically the patient was a squat woman with rounded facies and skull. Her height was 144 cm., span 145 cm., and weight 114 lb. Her hands were short and broad. Her nails and teeth appeared normal. The texture of her skin and hair was normal. Her acuity of vision was fair. Right-sided oculomotor paresis was present, her hearing was impaired, and her speech was an unintelligible jargon. Chvostek and Trousseau signs were negative. Her blood pressure was 100/60 mm. Hg. Serum calcium was 10.4 mg. %, serum phosphorus 2.0 mg. %, serum alkaline phosphatase 4.71 King-Armstrong units, and total proteins 6.4 g. %. On radiological examination, there was shortening of the metacarpals generally, but more especially of metacarpals IV and V. A small simple cavity formation was present in the right scaphoid. There was no evidence of calcinosis or ectopic ossification. Her intelligence was within the imbecile range, her I.Q. being 30.

CASE 2.—This patient was aged 47 years. Her facies was broad and her build thickset and stocky. Her height was 151 cm., span 150 cm., and weight 124 lb. Her hands were short and broad. The nails, skin and hair were normal. Her lower teeth were crowded and irregular. Acuity of vision was normal. Chvostek and Trousseau signs were negative. Her blood pressure was 100/64 mm. Hg. Serum calcium was 10.7 mg. %, serum phosphorus 3.36 mg. %, serum alkaline phosphatase 4.28 K.-A. units, and total proteins 6.89 g. %. Radiological examination showed appreciable shortening of the metacarpals, more especially of metacarpals IV and V; metacarpal V was also as broad as metacarpal I. There was no evidence of calcinosis or ectopic ossification. Her I.Q. was 33. A thyroidectomy scar was present; the patient was reported to have had a goitre removed prior to admission.

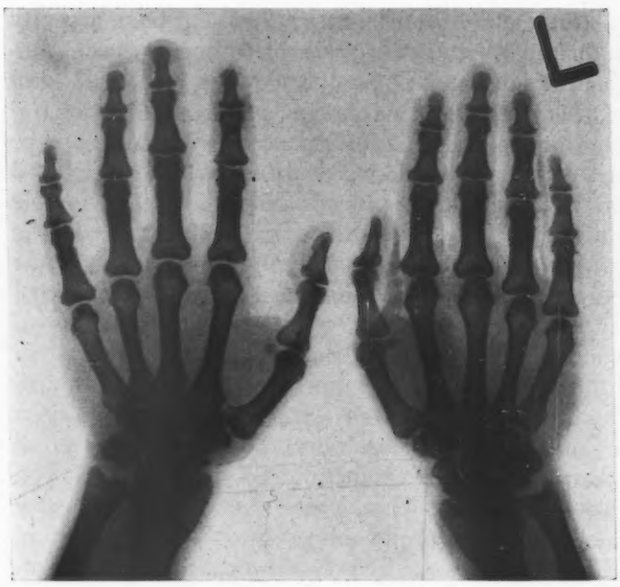

Fig. 1.—(Case 2) Shortening and broadening of metacarpal V.

CASE 3.—The third patient was 43 years of age. Her build was thickset and stocky, with rounded face and receding chin. Her height was 144 cm., span 140 cm., and weight 124 lb. The hands were short and broad and the tips of the fingers were slightly bulbous. Her nails, hair and skin were normal. The teeth were fairly normal. Her acuity of vision was normal. Chvostek and Trousseau signs were negative. Her blood pressure was 106/70 mm. Hg. Serum calcium was 9.4 mg. %, serum phosphorus 2.0 mg. %, serum alkaline phosphatase 7.28 K.-A. units, and total proteins 6.4 g. %. Radiologically metacarpals IV and V were disproportionately short and the phalanges also showed a greater width than normal. There was no evidence of calcinosis or ectopic ossification. Like her sisters, her intelligence was within the imbecile range, her I.Q. being 26. Her history showed that she also had severe dysmenorrhea for many years and that subtotal hysterectomy was carried out in 1956 for the removal of cystic ovaries and fibroid uterus.

DISCUSSION

The three cases presented have been characterized by reduced stature, rounded or broad face and anomalies of the metacarpals, more especially shortening of metacarpals IV and V, with or without an accompanying broadening. No patient presented evidence of tetany, and the serum calcium and serum phosphorus were within normal limits. The conditions would thus appear to correspond to the syndrome of pseudo-pseudohypoparathyroidism or brachymetacarpal dwarfism as defined by Van der Werff ten Bosch. All three were women, in keeping with the same author's finding of a predominantly female incidence. A familial incidence has already been reported by Seringe and Tomkiewicz[6].

Intellectual retardation was present from an early age and all patients were of imbecile grade. Impaired intelligence can be a feature of both idiopathic hypoparathyroidism and pseudohypoparathyroidism. Idiopathic hypoparathyroidism may be associated with backwardness in young people[7] and with dementia in older subjects[8]. The reversible nature of the dementia after restoration of the serum calcium to normal suggests that in some cases at least the mental state is a direct result of hypocalcemia. Also in a number of instances of pseudohypoparathyroidism, improved mental state has followed administration of calciferol or dihydrotachysterol to raise the serum calcium to normal levels[9]. In other instances, however, intellectual retardation is permanent and irreversible. The presence of intellectual retardation from an early age and the absence of progressive deterioration in such cases would tend to indicate a basic amentia. In view of the recorded prevalence of intellectual retardation in pseudohypoparathyroidism, it would not be surprising to find it occurring in the closely allied state of pseudo-pseudohypoparathyroidism or brachymetacarpal dwarfism, and hence to find instances of this unusual condition in institutions for the mentally defective.

In the diagnosis of brachymetacarpal dwarfism, there are, quite apart from pseudohypoparathyroidism, a number of equally rare diseases associated with abnormality of the metacarpals, but only fortuitously associated with mental defect. They include the Marchesani syndrome, familial brachydactyly and myositis ossificans progressiva.

In the Marchesani or Weill-Marchesani syndrome, short stature and brachydactyly are combined with spherophakia. The small spherical lens of spherophakia gives rise at an early age to high myopia and glaucoma, and hence most cases of the syndrome are likely to be seen initially by ophthalmologists. Brachydactyly is severe and the hands are strikingly small. Symmetrical shortening and widening of metacarpals and phalanges is associated with marked retardation in carpal ossification. The thick palms and short, stumpy fingers, wide at their bases, result in a trident-shaped hand. In the two cases described by Zabriskie and Reisman[10] there was inability to flex the fingers completely or make a fist. Short feet and toes may also occur. Mental defect does not appear to be an associated feature. The condition is hereditary and Falls[11] suggests that an autosomal recessive gene is responsible, although incomplete dominance is a possibility in some instances. Recently Bowers[12] has recorded the first instances of the syndrome in Canada, in a sibship where arachnodactyly was also present.

Familial brachydactyly is a dominant condition, first described in detail by Brailsford[13]. Both fingers and toes are generally affected, and short stature may be an accompaniment. Deformity is the result of a number of skeletal anomalies. These include broadening and shortening of the terminal, medial and proximal phalanges, total or partial absence of phalanges, and shortening of metacarpals and metatarsals. The terminal phalanx of the thumb may be exceptionally short, the short first metatarsal may be deformed by exostosis, and middle and terminal phalanges of the little toes may be fused. Serum calcium and phosphorus are not altered.

In myositis ossificans progressiva shortening of digits is generally limited to thumbs and great toes. Deformity of the distal ends of the first metatarsals is apt to result in hallux valgus. Serum calcium and phosphorus are unaltered. Apart from brachydactyly the disease is characterized by slowly progressive ectopic calcification, setting in mainly during the first decade, principally in males, and leading to increasing stiffness from ossification in affected muscles and related structures.

SUMMARY

Three cases of brachymetacarpal dwarfism or pseudopseudohypoparathyroidism have been described in siblings. Shortness of stature was associated with shortness of the lateral metacarpals and absence of tetany. In each case intellectual retardation was an additional feature.

I am indebted to Dr. H. S. Atkinson, Medical Superintendent of the Manitoba School, for permission to utilize the institutional records.

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PAGES OUT OF THE PAST: FROM THE JOURNAL OF FIFTY YEARS AGO

It is a well-recognized fact that men, prejudiced by the teaching of former generations, are often blind to facts which may directly come under their own observation. For example, we find a surgeon who visited Lister's wards in the autumn of 1873 writing his impressions to the *Lancet*, and saying, "I left his wards, as any man who conscientiously desired to find out and uphold the truth must have done in my place, with the last remnant of my belief in Professor Lister dissipated to the winds." There is a warning here to those who would commit their views too hurriedly to writing; they may find, as many of Lister's hostile critics have done, that they have placed on record observations which reflect little credit on their acumen and sagacity.—A. Primrose: Address in Surgery to the 44th Annual Meeting of the Canadian Medical Association, *Canad. M. A. J.*, 1: 601, July 1911.

LATE CAUSES OF DEATH AND LIFE EXPECTANCY IN PARAPLEGIA

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INTRODUCTION

THE RESULTS of spinal cord trauma were observed and recorded by Hippocrates 2500 years ago.[1] He described the retention of urine and feces, the loss of strength and torpor of the lower limbs, the cold skin and the fatal termination. Hippocrates was more interested in the bony deformity than in the paralysis, and he devoted much space to the description of ways and means of correcting the deformity by succussion, traction and manipulation. At times the unfortunate victim of a fracture dislocation was tied to a ladder and dropped head-first from a height, the sudden jar on striking the ground sufficing, on occasion, to reduce the dislocation. Alternately, the operator stood on the gibbus in an effort to reduce the dislocation.

Many observers must have gained considerable knowledge of spinal cord injuries and the complications thereof during the intervening centuries, but the chief impression created by this disorder was its high mortality. Burrell[2] reported the mortality in 244 cases treated in the Boston City Hospital between 1864 and 1903 (Table I).

TABLE I.—BURRELL'S 244 CASES—1864 - 1903
OVERALL MORTALITY—64.5%

Cervical	86	Dead 77	(85.7%)
Upper dorsal	43	Dead 37	(76.7%)
Lower dorsal	75	Dead 41	(56.1%)
Lumbar dorsal	40	Dead 20	(50.0%)

86.7% of deaths occurred in first month.

Gurlt, reporting from Hamburg in 1864, recorded an 80% mortality in 272 cases, but the survival period is not stated.[3]

The following case report serves to illustrate that clinical knowledge of this disorder was lacking in the latter years of the nineteenth century.

"On July 2, 1881, President Garfield was shot by a disappointed office seeker. He was attended by the Surgeon General of the U.S.A. and other eminent medical persons. Although his legs were paralyzed and he complained of heaviness and pain in his legs and lost control of bladder and bowel, the nature of his injury is said not to have been recognized until after death. He died on September 19, 1881. Autopsy revealed that the bullet had traversed the first lumbar vertebra, causing paralysis. The patient's downhill course during that summer was typical of spinal cord injury, for he experienced fever, chills, weight loss and infected pressure sores. The final cause of death was rupture of a traumatic aneurysm on the splenic artery."[4]

The failure to establish the precise nature of the President's injury by careful clinical examination is in striking contrast to the informed writings on paraplegia recorded by Frazier and Allen[5] early in the twentieth century. These authors were conversant with the problems of paraplegia and the management thereof as we understand them today. Thus, they discuss the indications for operative treatment of the spinal lesion, the prevention of pressure sores and the care of the genitourinary tract.

Their mortality figures show marked improvement during the period covered by their study, which was from 1901 to 1915. Overall mortality for 499 cases prior to 1911 was 67.9% and that for 314 cases from 1911 to 1915 was 26.8%. The precise length of follow-up is not stated.

Other sources confirm the high mortality following spinal cord injury. The Veterans Administration Technical Bulletin on Spinal Injuries, published in Washington in 1948, states that following World War I, only 20% of soldiers receiving spinal cord injuries reached the U.S.A. alive, and only 10% survived for longer than one year. Riches[6] and Guttmann[7] independently report 80% mortality for spinal cord injuries in World War I, Nesbit and Lapides[8] 60%, and Cook[9] a three-week mortality of 14%, a two-month mortality of 61%, and a two-year mortality of 81%.

Despite these high mortality experiences it is interesting to consider the following case report of an untreated paraplegic who achieved as good a result as could be hoped for in the most meticulously treated case today.

In July 1948, a 65-year-old woman, a complete paraplegic at thoracic level 6-7, died in the Toronto General Hospital and was examined post mortem. Her history was as follows.

On July 1, 1900, at the age of 17, while attending a lacrosse match in company with a young man, another young man who aspired to be her escort arrived on the scene with a gun, shot and killed his rival, shot the patient through the spine, rendering her completely paraplegic at thoracic level 6-7, then killed himself.

This young woman was sent home by her doctors to die, but with the help of a nurse she learned to care for herself and to support herself. She worked as a dressmaker, living in Toronto.

The autopsy examination revealed pulmonary edema, fragmentation of the heart muscle and a bladder which was thickened and slightly trabeculated. The kidneys were normal and free from infection, both grossly and microscopically. Her survival period of 48 years is not much different from the anticipated survival period of a non-paraplegic white woman.

Many unrecorded patients have, no doubt, achieved long and useful lives, relatively free from the common complications of spinal cord transection.

PRESENT STUDY

The present study is based on a group of patients who suffered impairment of spinal cord function due to trauma and who were treated at Lyndhurst Lodge, Sunnybrook Veterans Hospital and the Toronto General Hospital between January 1, 1945, and December 31, 1958. The impairment was occasioned by (1) a compression fracture of a vertebral body or fracture of a vertebral arch, (2) a fracture dislocation, (3) a missile injury, (4) trauma in which no fracture or dislocation could be demonstrated. This total group of patients numbered 643. Twelve were eliminated from the study because it was not possible to trace them and determine whether they were living or dead. Seventeen were eliminated because the year of birth or date of onset of injury could not be determined. Fifteen who suffered partial lesions and recovered essentially normal bladder function were not included. Patients in this group had no residual urine, and no bacteria were grown on urine culture. Thus, the remaining total of those included in the study is 599.

The information was gathered from a questionnaire plus a detailed follow-up study conducted by the Manufacturers Life Insurance Company, whereby an attempt was made to identify the status (whether living or dead) of each individual, together with the date and place of death.

The total number dead of the 599 was 94 (15.7%). Expected deaths in the group were calculated using the United States of America 1949-51 White Male Population Table.

By comparison, Guttmann[10] reported a mortality of 8.3% in 1000 cases from Stoke-Mandeville Hospital; these patients were followed up over a period of 10 years (1944-54). The mortality becomes 6.2% when those patients who died from causes other than spinal paraplegia are excluded.

The Veterans Administration Central Office in Washington reported a mortality rate of approximately 14% in more than 5700 patients treated between January 1, 1946 and September 30, 1955.

The cause of the spinal cord injury was not necessarily trauma in either of the above groups.

In the present study on traumatic paraplegia, data are given on the frequency of the cause of death in Table II.

TABLE II.—TRAUMATIC PARAPLEGIA

Cause of death		
Renal failure	40	42.5%
Cardiovascular disease	9	9.6%
Gastrointestinal tract	10	10.6%
Pneumonia	8	8.5%
Infected pressure sores	7	7.4%
Neoplasm	4	4.3%
Cerebrovascular accident	5	5.3%
Tuberculosis	2	2.1%
Peritonitis	1	1.1%
Pulmonary edema	1	1.1%
Accidental death	1	1.1%
Unknown	6	6.4%
	94	100.0%

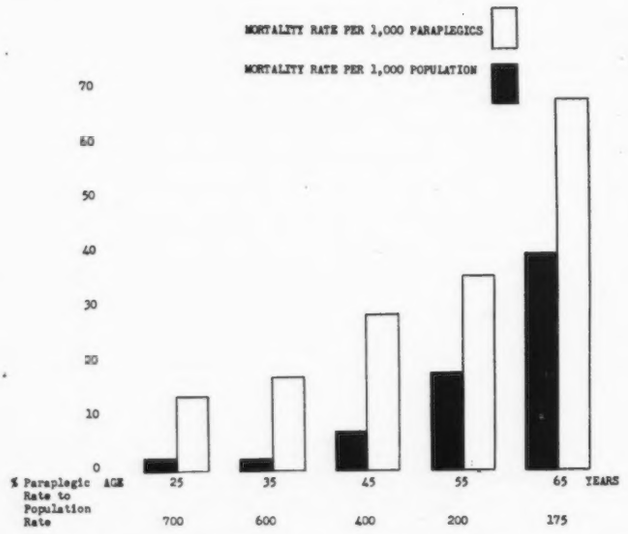

Fig. 1.—Mortality for the total population compared with that for the paraplegic group under study. The values are given for five different ages. The range is from 7 times as great for paraplegics at 25 years to 1¾ times as great at 65 years.

The diagnosis in Table II was obtained by post-mortem examination in 40 instances and in 21, from direct knowledge of the case, the patient's course having been followed for some time prior to death, including the period of terminal illness. Of the four deaths due to primary neoplasms, none came to autopsy. However, the lesions were accessible to biopsy and the diagnosis was thus confirmed ante-mortem. Thirty-three patients were under the care of a physician in another centre and the cause of death was obtained through correspondence with the attending physician.

Table III shows the cause of death in the 40 cases which came to autopsy.

TABLE III.

Cause of death		
Renal failure	20	50.0%
Cardiovascular disease	3	7.5%
Gastrointestinal disease	8	20.0%
Pneumonia	4	10.0%
Infected pressure sores	3	7.5%
Cerebrovascular disease	1	2.5%
Tuberculous meningitis	1	2.5%
	40	100.0%

Urinary sepsis remains the chief cause of death in this group of patients who received careful urological supervision from the first contact. However, good bladder hygiene may not have been practised when the patients were living on their own out of hospital.

Among the deaths attributed to cardiovascular disease (Table II), coronary occlusion was the commonest cause. No patients were considered to have died from a pulmonary embolism originating in a thrombophlebitis of the lower extremities despite the common occurrence of the disorder in paraplegics.

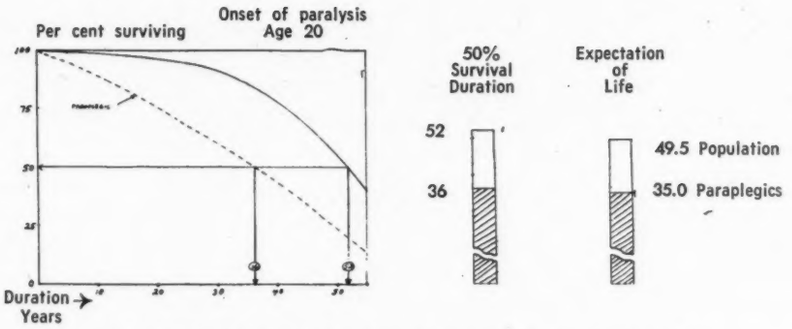

Fig. 2.—Population mortality vs. paraplegic mortality. The 50% survival values at age 20, paraplegics, Lyndhurst Lodge. Life expectancy and 50% survival duration (the period of time required for 80% of a group to die) are compared.

The gastrointestinal deaths included two from liver disease and several from perforation of a peptic ulcer. Acute dilatation of the stomach was responsible for two deaths, before we learned to be on guard for this complication and to treat it promptly and effectively.

Four patients of those listed in Table III had amyloid degeneration: of these four, two died of urinary sepsis, one of cardiovascular disease and one from infected pressure sores.

COMPARISON OF MORTALITY RATES

The remainder of this paper will compare mortality figures for paraplegia with those for the total population.

Fig. 1 compares the mortality for the total population with that for the paraplegic group under study. The values are given for five different ages. The range is from 7 times as great for paraplegics at 25 years to 1¾ times as great at 65 years.

Figs. 2, 3 and 4 give the 50% survival values at ages 20, 35 and 50 years. Life expectancy and 50% survival duration* are also compared.

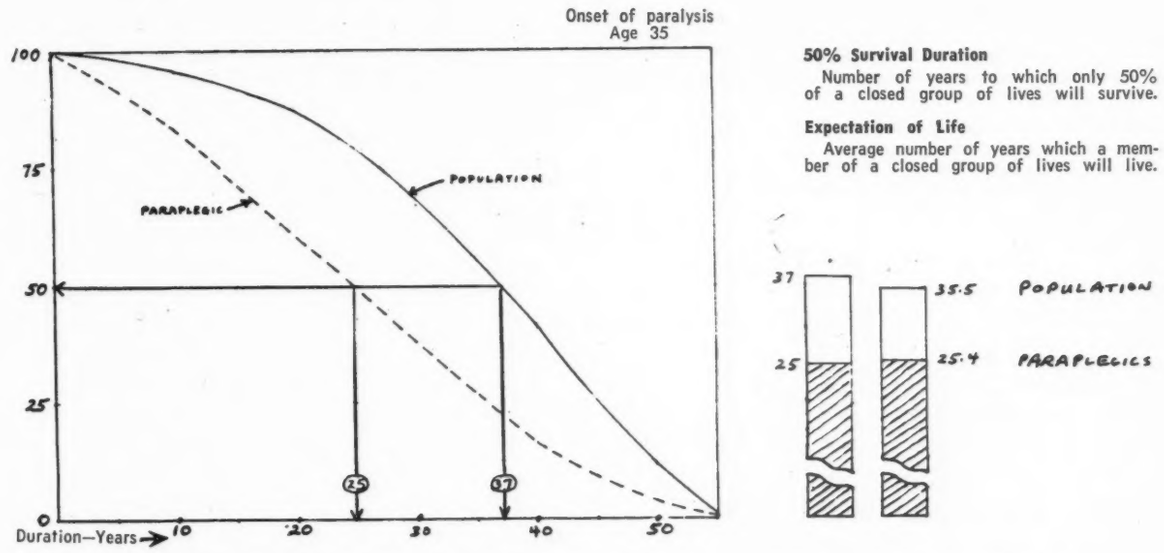

Fig. 3.—The 50% survival values at age 35, paraplegics, Lyndhurst Lodge. Life expectancy and 50% survival duration are compared.

One patient suffered a fatal cerebrovascular accident when his bladder was being irrigated. It is likely that in certain patients elevation of the blood pressure as a result of bladder distension precipitates cerebral hemorrhage.

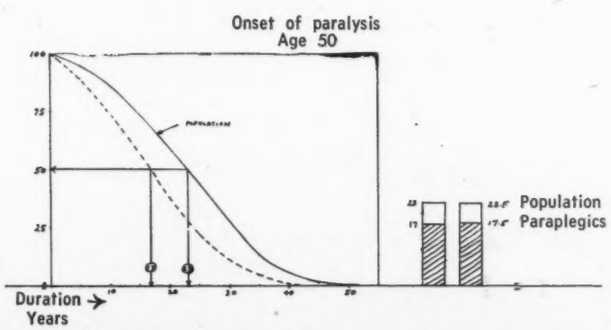

Fig. 4.—The 50% survival values at age 50, paraplegics, Lyndhurst Lodge. Life expectancy and 50% survival duration are compared.

Table IV records the number of life years of exposure† and compares the actual mortality with the expected mortality in total population tables. For the first 5½ years the percentage mortality is 356% of the total population mortality. For the subsequent period of the study—that is, beyond 5½ years—it declines to 256% compared with the total population mortality. For all years combined, it is 299%, or three times the expected total population death rate. The baseline of total population mortality is represented by 100%.

Table V records the results from the study of deaths by duration in years from the onset of para-

*The 50% survival duration is the period of time required for 50% of a group to die.
†Life years of exposure is the period in years from onset of paraplegia to the time of the study or to death. Thus a patient injured in 1948 who died in 1953 is said to have five life years of exposure.

TABLE IV.—NUMBER OF LIFE YEARS OF EXPOSURE

Age	No. of life years of exposure	Actual No. of deaths 1st 5½ years	Expected No. of deaths	Act. / Exp. ×100
0-42	1820.0	24	3.663	655%
43-60	408.0	13	4.744	274%
61 and over	113.0	11	5.091	216%
	2341.0	48	13.498	356%
		After 5½ years		
0-42	1394.0	22	3.460	636%
43-60	610.0	14	7.179	195%
61 and over	174.0	10	7.326	137%
	2178.0	46	17.965	256%
		All years combined		
0-42	3214.0	46	7.123	646%
43-60	1018.0	27	11.923	226%
61 and over	287.0	21	12.417	169%
	4519.0	94	31.463	299%

TABLE V.—STUDY OF DEATHS BY DURATION OF PARALYSIS

Duration (years)	No. of deaths	Duration (years)	No. of deaths
0-1/2	4	7½-8½	6
1/2-1½	13	8½	4
1½	11	9½	1
2½	10	10½	3
3½	4	11½	1
4½	6	12½	4
5½	8	13½	2
6½	4	14½ and over	13

NOTE:—The duration is measured from the date of onset of the disability.

lysis. There is a noticeably greater number of deaths per year up to 2½ years.

Table VI depicts the results of a study of deaths in relation to the level and completeness of the lesion. For complete quadriplegia the death rate was 12 times that of the total population; for complete paraplegia, 4¾ times; for partial transection of the cord in the cervical region, just over three; and for partial paraplegia, 1⅓ times.

Table VII compares the death rate for total transection of the cord at all levels, partial transection of the cord at all levels and the expected death rate in the total population. In the final column all of these are combined and the death rate is seen to be three times that for the total population.

It will be noted that the mortality in paraplegia has been greatly reduced as a result of careful surgical and medical management. To these measures of control must be added the care the patient exercises on his own behalf once he has been properly educated.

Genitourinary sepsis remains the greatest single cause of death in this group, accounting for up to 50% of the fatalities.

CONCLUSIONS

The death rate of carefully treated paraplegics is three times that of the total population. Genitourinary sepsis continues to be the chief cause of death, accounting for up to 50% of the fatalities.

SUMMARY

A study has been made of the late complications and the incidence of death amongst 599 cases of traumatic paraplegia. Information was gathered from a questionnaire plus a detailed follow-up of each patient to ascertain whether he was alive, or the date and place of his death. The total number dead was 94 (15.7%). A comparison is made between the death rate in patients with paraplegia and that for the total population.

TABLE VI.—DEATHS IN RELATION TO LEVEL AND COMPLETENESS OF LESION

Age	Act.	Exp.	%	Act.	Exp.	%	Act.	Exp.	%
	Quadriplegic complete			*Quadriplegic partial*			*Quadriplegic*		
0-42	8	.693		4	1.067		12	1.760	
43-60	5	.400		3	2.317		8	2.717	
61 and over	2	.101		9	3.901		11	4.002	
Total	15	1.194	1256%	16	7.285	220%	31	8.479	366%
	Paraplegic complete			*Paraplegic partial*			*Paraplegic*		
0-42	26	3.217		8	2.146		34	5.363	
43-60	13	4.108		6	5.098		19	9.206	
61 and over	5	1.945		5	6.470		10	8.415	
Total	44	9.270	475%	19	13.714	139%	63	22.984	274%

TABLE VII.

Age	Act.	Exp.	%	Act.	Exp.	%	Act.	Exp.	%
	Complete			*Partial*			*All combined*		
0-42	34	3.910		12	3.213		46	7.123	
43-60	18	4.508		9	7.415		27	11.923	
61 and over	7	2.046		14	10.371		21	12.417	
Total	59	10.464	564%	35	20.999	167%	94	31.463	299%

This study of the late causes of death and life expectancy in traumatic paraplegia is based on the clinical work of Dr. Carl Aberhart, Dr. E. H. Botterell, Dr. Frederick Dewar, Dr. Stuart Gordon, Dr. A. T. Jousse, at the Toronto General Hospital, Lyndhurst Lodge and Sunnybrook Veterans Hospital, Toronto. The statistical analysis was carried out by Mr. Robin Leckie of the Actuarial Department of the Manufacturers Life Insurance Company, Toronto.

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SPECIAL ARTICLE

THE PRESIDENT'S VALEDICTORY ADDRESS: 1961*

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AMONG the duties prescribed in the By-law for the President of the Canadian Medical Association is that he shall present a presidential address. This I have undertaken to do at the nine divisional annual meetings which I have been privileged to attend, and on each of these occasions I have urged that the humanitarian aspects of our profession be uppermost in our minds in dealing with our patients. I firmly believe that this obligation of our art takes precedence over the scientific advances which we have inherited and that the good doctor requires above all to be a kindly man.

This occasion, however, is different and I know that you will require of me that I express my thoughts based on the experience of the past twelve months as your President. Although this speech is referred to as a valedictory, I have no desire to bid you farewell. Anyone who has served as President has an obligation to continue to interest himself in the services of our Association. Your Past-Presidents are full-fledged members of the General Council and the recent action of the Executive Committee to encourage their attendance at sessions of this body will, I hope, be helpful as we strive to solve the problems which confront us.

I would pay tribute to my predecessor, Dr. Kirk Lyon, who during his term of office as Canadian Deputy to our Royal President, called our attention to the realities of the situation as he saw them and caused us to examine our attitude to the trends of our time.

At the time of my installation as your President, the trends which I have mentioned became real, and immediate problems and considerations which might formerly have been regarded as theoretical emerged as the issues which confront the profession today. I will endeavour to simplify this talk of trends, issues and problems by stating what I believe to be the essence of the situation which faces us in 1961.

It is this: unmistakable evidence exists that our fellow citizens in large numbers are attracted by the prospect that medical services insurance under government auspices is not only desirable but possible of attainment very shortly. In case any of you doubt that this is the heart of the problem, I would point to the outcome of last summer's election in Saskatchewan and to the official pronouncements of at least two major political parties in Canada. We recognize that Canadians have a right to consider that such a proposal for the provision of, and payment for, personal health services is in their long-term best interest. We may doubt that this is so but it would be the height of folly to deny that this public attitude exists.

It is well known that we in Canada have gladly accepted a large element of government participation in the provision of health services and the application of public funds to finance them. Federal health services include those provided through the Department of Veterans Affairs, the Department of National Defence, the Immigration and Sick Mariners Medical Service, the Indian and Northern Health Services, the National Health Grants program, the Federal contribution to hospital insurance and the recent substantial support given to medical research through the Medical Research Council.

It is, however, constitutionally and traditionally within the area of provincial responsibility that matters of health reside, and the publicly financed programs of health services represent a substantial proportion of the budgets of every provincial government in this country. It is difficult to overemphasize the importance of the public health services which have given us the ability to live safely in communities and without which we could

*Presented at the 94th Annual Meeting of the Canadian Medical Association, Montreal, June 19, 1961.

scarcely qualify as civilized. Provincially financed institutions and personnel undertake the management and treatment of mental illness, tuberculosis and, in certain provinces, cancer. It is unnecessary to stress the large expenditure of public funds related to hospital insurance, but it is reasonable to suggest that the recent interest in extending insured services to institutions for the care of convalescents and the chronically ill, as well as to rehabilitation, appear to be logical steps in the public interest. You are aware that medical services to an important element in our society—the recipients of old-age assistance, the recipients of mothers' allowances, blind pensioners, disability pensioners and others who are properly classified as medically indigent—are in six provinces provided by a provincial subsidy and a large gratuitous contribution by the doctors who furnish care.

There are two other situations in Canada that are worthy of mention in this connection—(a) the municipally organized and local tax-supported plan of medical services insurance which has operated since 1948 in the Swift Current Health Region of Saskatchewan; and (b) the system of medical care which is operating in Newfoundland. The unique features of the latter are the cottage hospital services, providing medical care to the scattered population of the outports through salaried doctors and nurses, and the more recently instituted children's health services whereby the population from birth to the age of 16 are provided with in-hospital medical services at the public expense.

In this brief and incomplete review of the health services now available, it will, I hope, be evident that we Canadians have in this year 1961 a considerable amount of publicly financed health care. This situation has come about gradually, and I think that few of us would condemn the steps by which we have come and most of us would applaud the fact that evolution rather than revolution has applied. There remains, therefore, the broad field of personal health services where the conditions of private practice still exist and where the relationship of doctor and patient is as intimate as any existing between human beings.

The increasing complexity of medical knowledge and its application to the needs of patients has inevitably given rise to increasing specialization, a greater demand for the services of doctors and a growing need for a means of financing medical care.

As early as 1937, the medical profession recognized this need and, applying the principles of insurance, sponsored, financed and promoted plans of prepaid medical care. Today eleven such medically sponsored plans operate in every Canadian province and cover over four million of our fellow citizens.

The operation of these plans has shown that it is possible to budget for the costs of personal health services and that the plans offer a generally acceptable administrative method to accomplish it. Social planners show a tendency to attribute increased utilization under insurance to previously unmet medical needs, but may I suggest that this factor should not be over-emphasized and that we should distinguish as clearly as possible between medical need and demand. Medical need is measurable in practical terms while medical demand is to a great degree unpredictably large.

These considerations assume some importance when we consider the medico-political climate which surrounds us in Canada today. I have sketched for you the degree to which we are provided with health services under public financing, and it is not to be wondered at that political leaders and political parties should sense the popular appeal of a proposal to provide medical services insurance under government auspices. I believe that this situation confronts us because of the world-wide movement towards the provision of health insurance, because of the relatively satisfactory experience in other aspects of health services under governments, and because voluntary medical services insurance has demonstrated that medical care may indeed be provided by prepayment.

One observes that governments in power, harassed by the necessity of financing their current commitments, exhibit a more cautious approach than parties seeking appealing election issues. I believe, however, that the responsibility for finding the necessary revenue from taxation will not act as an ultimate deterrent and that medical services insurance will be supported as a desirable objective in forthcoming political campaigns.

Faced with the possibility that far-reaching decisions with respect to the provision of personal health services might be made in the heat of political controversy, it was decided by your Executive Committee to take such steps as were possible to bring this matter under serious study. Accordingly, we communicated with the Prime Minister of Canada, asking that a Royal Commission on Health Services be set up. The Prime Minister expressed his agreement with this suggestion and in the House of Commons announced that a Royal Commission would be appointed to carry out the study. Almost immediately, the Chairman of the proposed Royal Commission was selected and his name made public, but since then nothing further has been announced with respect to the personnel of the Commission or its terms of reference. As your President, I feel that I should mention these facts in order that the members will know exactly the position taken by your Association, namely, to counsel the Government to carry out a careful and complete study of the whole field of health.

Last year this General Council undertook to restate its attitude to the developments which are so apparent to every Canadian doctor and we declared ourselves as follows:

"THE CANADIAN MEDICAL ASSOCIATION BELIEVES THAT:

—The highest standard of medical services should be available to every resident of Canada.

—Insurance to prepay the costs of medical services should be available to all regardless of age, state of health or financial status.

—Certain individuals require assistance to pay medical services insurance costs.

—The efforts of organized medicine, governments and all other interested bodies should be co-ordinated towards these ends.

—While there are certain aspects of medical services in which tax-supported programs are necessary, a tax-supported comprehensive program, compulsory for all, is neither necessary nor desirable."

As we face the immediate obligation of presenting the views of the profession to the Royal Commission on Health Services, we should ask ourselves whether these beliefs provide a firm foundation for our submission. May I suggest that they do and that they represent the beginning of a worthy contribution to a complex and difficult subject. Beliefs, however, require translation into positive proposals and it has been the task of this year's Special Committee on Prepaid Medical Care to interpret our beliefs in terms which are applicable to the needs of our fellow citizens. If I may further paraphrase and restate the recommendations of that committee, it is proposed that medical services insurance for all Canadians be available under the following conditions:

(a) For the self-supporting majority, through comprehensive policies provided by voluntary prepaid medical care plans.

(b) For the lower economic strata of our society and for persons over 65, through partial or total assistance from public funds.

I think you will agree that this is the essence of a good solution to a large problem and one which will permit the development of medical services in the atmosphere of freedom which we regard as so essential.

As we face the immediate future, we recognize as our primary obligation and duty the presentation of helpful submissions, based on our composite experience, to the Royal Commission on Health Services.

The essential unity of the medical profession in Canada is an asset which we cherish and this is based on a common determination to provide to all who consult us, the best medical care which our art and science makes possible. The Canadian Medical Association will exert every effort to co-ordinate the views of our diverse elements and in the process it is my hope that we will find that our diversities represent only the superficial evidences of difference and that basically we are a united profession. I am sure that we will prove ourselves to be reasonable men, capable of learning from the views of others and prepared to adjust our thinking when our inviolate principles are not at stake.

Although I have portrayed for you medical services insurance as the main issue before us and our fellow citizens, I would not leave the impression that a most searching examination of all health services will not be required. In the studies of the Royal Commission, I have reason to believe that a searchlight will be directed into the dark corners of existing health services and that the deficiencies disclosed will demand remedial action.

In all the talk about organization, systems, plans and projects, the central figure, the patient, will be uppermost in our minds and it is his well-being which will serve as the measuring stick for the evaluation of the merits of all proposals for improved health services in this country.

In conclusion, I would like to thank you for the privilege of acting as your President during the past year: a privilege that has been made a pleasure by the co-operation and many acts of kindness on the part of the Secretariat and members of our Association.

PAGES OUT OF THE PAST: FROM THE JOURNAL OF FIFTY YEARS AGO

The eminent French physiologist and physician, Magendie, who lived at the beginning of last century, began his work, as his biographer informs us, "surrounded by a carnival of rampant speculation," which developed in him "an extraordinary repulsion for all theories." "To express our opinion, to believe," wrote Magendie, "is nothing else than to be ignorant." "What subject, indeed, is more fertile in gross errors and absurd beliefs than that of health and disease." One can hear the echo of such sentiments to-day by certain of our colleagues who stand aloof and criticise with scathing scepticism the enormous amount of ill digested material which finds its way into our current medical literature. Would that our journalists could demand the same high standard that Magendie insisted upon when he founded the Journal de Physiologie Experimentale et Pathologique. "I believe," he wrote, "that I would be doing something useful in publishing a periodic work designed to contain all facts which tend to throw light upon the history of men in health and disease. I shall receive, therefore, with acknowledgment, and place in the collection which I now announce, all physiological work, all medical researches, which, based on precise observations, exact experiments, and controlled by a spirit of severe impartiality and love of truth, appear to me to be suitable for illuminating the phenomena of life." Magendie insisted on proving all facts by experiments. "I have eyes but no ears," he used to say, and this principle guided him throughout his life's work.—A. Primrose: Address in Surgery to the 44th Annual Meeting of the Canadian Medical Association, *Canad. M. A. J.*, 1: 601, July 1911.

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CASE REPORTS

SIMULTANEOUS ONSET OF DIABETES MELLITUS AND THE NEPHROTIC SYNDROME*

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THE MOST important complications of juvenile diabetes are vascular lesions.[1, 2] In the experience of the Joslin Clinic these complications are rare in the first 10 years of the course of the disease, but the incidence increases to 20% after 15 years' survival. No lesions have been recognized clinically in children under 10 years of age.

The nephrotic syndrome has been described as a clinical correlate of intercapillary glomerulosclerosis, a complication which characteristically develops a number of years after the onset of diabetes.[3] Recent case reports[4] describe the occurrence of the nephrotic syndrome early in the course of juvenile diabetes.

Our recent experience of the co-existence of these two diseases, while not accompanied by renal biopsy findings, provides another example of the simultaneous onset of juvenile diabetes and the nephrotic syndrome in a child.

This 8-year-old girl was in good health until November 1959, when she developed edema of the eyelids, followed by edema of the legs, and ascites. During the preceding weeks she had had nocturia and polyuria. She did not have polydipsia.

She was admitted to the Royal Inland Hospital in Kamloops, British Columbia, on November 19, 1959, for investigation. On examination, puffiness of the eyelids, ascites and marked edema of the legs were noted. The fundi were normal. The blood presure was 110/80 mm. Hg. Her weight was 65 lb.

Initial laboratory investigations revealed albuminuria, glycosuria and ketonuria. The urinary sediment contained numerous white and red blood cells but no casts, and on culture grew *E. coli*. Repeated urine studies during the first two days in hospital showed persisting albuminuria, glycosuria and ketonuria.

Further laboratory investigations revealed the following values: fasting blood sugar, 212 mg. %; a random sample later in the day, 415 mg. %; serum protein, 3.8 g. %, albumin 1.6 g. % and globulin 2.2 g %; serum cholesterol, 356 mg. %; and non-protein nitrogen, 30 mg. %.

On the second hopital day a diagnosis of diabetes mellitus and nephrotic syndrome was made. Regular insulin was started. During the first two weeks in hospital her weight remained stationary. During the second week in hospital adrenal steroids were started, and after ten days the albuminuria disappeared and diuresis began. The serum protein returned to normal values.

She was readmitted in February 1960, with a recurrence of edema and albuminuria following a cold. Adrenal steroid therapy again produced a diuresis after two weeks. She was discharged on a maintenance dose of adrenal steroid.

She was well until nine days before her third admission, this time to the Vancouver General Hospital, in November 1960. Physical examination revealed gross edema of the face, abdomen and legs. The fundi were normal. The blood pressure was 110/70 mm. Hg. Her weight was 78 lb., and her height was 50 inches.

Laboratory investigations revealed the following values: 24-hour urine collection—3.3 g. protein and 3.2 g. glucose, with a normal sediment; sedimentation rate, 82 mm./hr.; blood urea nitrogen, 37 mg. %; serum cholesterol, 562 mg. %; serum protein, 3.1 g. %, albumin 0.9 g. % and globulin 2.2 g. %; serum sodium, 136 mEq./l.; serum potassium, 5.5 mEq./l. serum chloride, 111 mEq./l.; carbon dioxide combining power 18 mEq./l. The serum electrophoretic pattern showed decreased albumin, markedly increased α_2-globulin and decreased gamma globulin.

After three weeks' steroid therapy she weighed 85 lb., 25 lb. above her normal weight, and proteinuria persisted, although to a decreased extent. It was decided to start chlorothiazide therapy and this was given in the dosage of 5 mg./kg. every six hours for three days. A few hours after chlorothiazide was started diuresis commenced. The urine was found to be albumin-free the following day. Diuresis continued after chlorothiazide was withdrawn and the urine remained free of albumin. A weight loss of 30 lb. occurred. The disappearance of the albuminuria at the commencement of the diuresis, together with the continuation of the diuresis after the cessation of chlorothiazide, suggested that steroid-induced diuresis occurred coincidentally with the chlorothiazide diuresis.

Prior to her discharge she weighed 55½ lb. Final laboratory studies showed the following values: serum protein 6.6 g. %, serum albumin 3.5 g. % and serum globulin 3.1 g.; blood urea nitrogen, 12 mg. %; serum cholesterol, 256 mg. %; and sedimentation rate, 62 mm./hr.

Her diabetes was unstable during the administration of steroid therapy and her insulin needs were increased.

DISCUSSION

The diagnosis of nephrotic syndrome is based on the clinical picture of generalized edema together with proteinuria, hypoproteinemia and hypoalbuminemia with hypercholesterolemia in the absence of persisting azotemia or hypertension. Persisting glycosuria, initial ketonuria and hyperglycemia establish the diagnosis of diabetes mellitus.

Recent studies of renal biopsies of diabetic adults indicate that renal vascular disease may exist in the absence of clinical renal disease.[5, 6]

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These studies also emphasize the early onset of the vascular lesion of the glomerular capillary.[5] One 19-year-old patient described by Goetz had had diabetes for six months and electron microscopy showed the irregular basement membrane thickening characteristic of the diabetic glomerulus. There was no clinical or laboratory evidence of renal disease and by light microscopy the glomeruli were normal. Nearly all patients with diabetes mellitus of five years' duration or more showed some degree of such changes with the electron microscope.

Vernier's[7] recent experience with the renal biopsy findings of five diabetic children showed renal vascular disease earlier than expected and in the absence of clinical renal disease. He suggested that the renal disease of juvenile diabetes may have its onset simultaneously with the onset of the diabetes.

McCrory *et al.*[4] described the occurrence of the nephrotic syndrome in four diabetic children, together with biopsy findings. In three children the nephrotic syndrome developed after four, eight and twelve years' duration of diabetes. In the first patient the electron microscope revealed changes characteristic of the nephrotic syndrome; in the second there were minimal signs of nephrosis and typical changes of diabetic nephropathy; the third manifested the changes of diabetic nephropathy only. In the fourth case the nephrotic syndrome developed "almost simultaneously" with the diabetes, and the renal biopsy showed changes of the nephrotic syndrome.

The case herein reported is of interest in that the diagnosis of diabetes mellitus and the nephrotic syndrome were established concurrently and appear to resemble McCrory's fourth case.

SUMMARY

The case of an 8-year-old girl with simultaneous onset of diabetes mellitus and the nephrotic syndrome is reported. The early occurrence of the nephrosis is of interest in view of recent renal biopsy studies in diabetics which have shown early involvement of the glomerular capillary.

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QUINIDINE INTOXICATION TREATED BY ISOPROTERENOL (ISUPREL)*

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THE CARDIAC toxicity of quinidine has been well documented[1] since the first report of Frey on the use of this drug in cardiac arrhythmias.[2] However, little has been written on the treatment of cardiac arrhythmias induced by quinidine. In a recent paper, Bailey[3] mentioned isoproterenol as a theoretically good antagonist of quinidine, but he added that its use in quinidine intoxication had never been reported. It is the purpose of this paper to report a case of ventricular flutter due to quinidine and its successful treatment with isoproterenol (Isuprel).

A 55-year-old white woman (H.F.H. No. 956208) was admitted to the cardiology in-patient service of the Henry Ford Hospital in July 1959 with congestive heart failure and rapid auricular fibrillation secondary to mitral stenosis. With bed rest, salt restriction, diuretics and digitalization, the heart failure was controlled and the heart rate decreased to 80 beats per minute. Conversion to a sinus rhythm was then attempted with quinidine. The drug was given orally every two hours, six times per day. Signs of toxicity were sought for prior to each dose. The first day a total of 1.2 g. was administered without effect on the patient or any change in her electrocardiogram. The following day 2.4 g. of quinidine was administered, again without any effect. After two days without quinidine, a total of 3.6 g. was given in six divided doses. Up to the last dose no effect or evidence of toxicity was noted.

Three hours after the last dose of quinidine, the patient complained of lightheadedness, weakness and fatigue. She then lost consciousness and had repeated generalized clonic convulsions. Her blood pressure, radial pulse and heart sounds were unobtainable. A continuous electrocardiogram showed a ventricular flutter of 250 beats per minute followed by ventricular fibrillation (Fig. 1a and b). Isoproterenol (Isuprel), 1 ml. (0.2 mg.), was injected intravenously and was followed by an intravenous drip of 5% dextrose in water containing 4 mg. (20 ampoules) of isoproterenol per litre. The ventricular flutter was converted almost immediately to a sinus rhythm (Fig. 1c and d). The parenteral drip of isoproterenol had to be maintained for the next 24 hours. Slowing or stopping it would produce various cardiac arrhythmias (Fig. 1e—h), such as bigeminy, wandering pacemaker, nodal rhythm and occasional episodes of ventricular flutter with grand mal seizures. Each time, increasing the rate of the

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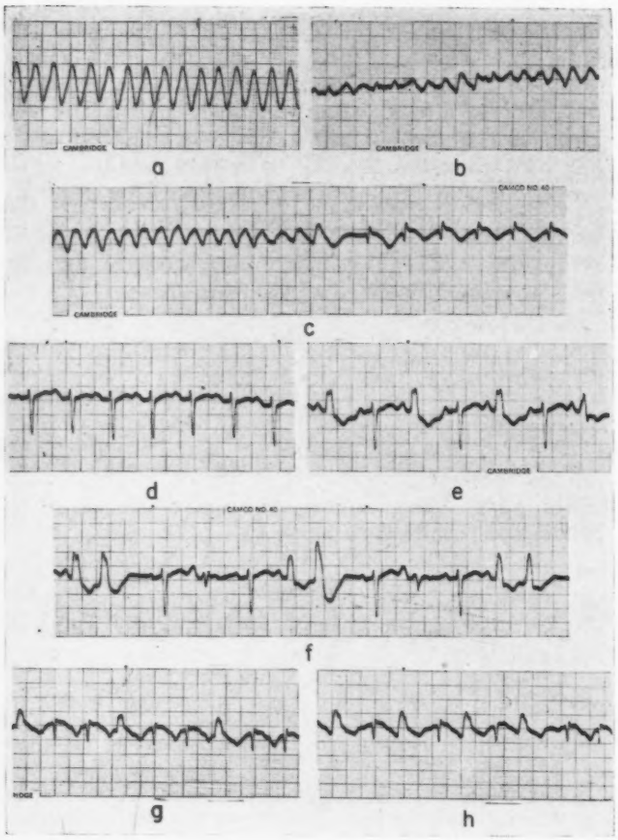

Fig. 1.—Electrocardiograms before and during treatment of quinidine intoxication with intravenous isoproterenol. (a) Ventricular flutter prior to therapy, (b) ventricular fibrillation, (c) conversion to a sinus rhythm. Lead III. (d) Sinus rhythm maintained with intravenous drip. Lead VI. (e-h) Variety of arrhythmias produced by slowing drip. Leads V_1 and aVR.

infusion would result in the return of normal sinus rhythm. After 24 hours the infusion of isoproterenol was stopped and the electrocardiogram remained normal. The patient had received a total of 8 mg. (40 ampoules) of isoproterenol. She was discharged one week later, free of symptoms and with a sinus rhythm.

COMMENTS

The most serious complications of quinidine therapy are probably the cardiac arrhythmias it produces. These include sino-auricular and atrioventricular blocks, and ectopic rhythms of atrial, nodal and ventricular origin.[1] Clinically, quinidine appears to depress both the cardiac muscle and the intracardiac conduction system.[4] Depression of the S-A node can result in a shift of control of the cardiac rhythm to a pacemaker of slower rhythmicity in or about the atrioventricular node.[5] With severe depression of the nodes, complete heart block occurs and the idioventricular pacemakers are freed from the normal inhibitory effects of the higher pacemakers: ventricular tachycardia, flutter or fibrillation may follow. Physiologically, the action of quinidine may be due to interference of ion transfer across the cell membrane as recently described by Bailey.[3]

Treatment of Cardiac Arrhythmias due to Quinidine

There is little information in the literature concerning drugs that may be of value in the treatment of quinidine intoxication. Wetherbee, Hulzman and Brown[6] treated two patients with ventricular tachycardia due to quinidine by intravenous procaine hydrochloride. Atrial fibrillation followed two and seven hours respectively after the administration of the drug. Bailey[3] reported good results in two cases with the use of intravenous molar sodium lactate solution. On the other hand, Wasserman *et al.*[7] felt that molar sodium lactate did not alter the fate of animals severely poisoned by quinidine.

Adrenaline was found to revert the toxic action of quinidine.[8] However, its short-lived action was rapidly followed by reappearance of the toxic effects. Its use also carried the risk of producing fatal ventricular fibrillation. Noradrenaline and phenylephrine acted like adrenaline but were less powerful. Ephedrine was found to be only slightly effective, and acetylcholine was totally ineffective.

Isoproterenol

In recent years isoproterenol has been used in the prevention and the treatment of complete heart block with Stokes-Adams attacks and cardiac standstill.[9-11] In their study, McGaff, Cohen and Leight[12] reported that isoproterenol, a sympathomimetic amine, produced an increase in cardiac output resulting from the combined effect of augmented stroke volume and faster heart rate.

In theory the antidote of quinidine should have a directly inverse physiologic action. Isoproterenol seems to fill this requirement. It is described as one of the most effective sympathomimetic amines in lowering the irritability threshold of the heart while producing the least change in normal automaticity.[9-11] In comparing the site of action, isoproterenol produced a greater effect on the sinus pacemaker than it did on the nodal or idioventricular ones. In addition to stimulating the S-A node, isoproterenol increased atrioventricular conduction even in cases of complete heart block. By contrast, when adrenaline or noradrenaline were administered, induced foci from lower ventricular centres were noted frequently, which predisposed the heart to irreversible ventricular fibrillation. Thus, isoproterenol stimulates the higher pacemakers depressed by quinidine. It shortens the conduction time and the refractory period. This tends to re-establish the normal inhibition of the nodal or idioventricular pacemakers by the S-A node.

SUMMARY

A case of ventricular flutter due to quinidine, successfully treated by isoproterenol, is reported. A review of the literature on quinidine intoxication failed to reveal any patient previously treated by this drug. Because of the theoretical reasons discussed, and because of the ease of administration of isoproterenol,

we believe this drug to be the best antidote available at present for the treatment of cardiac arrhythmias due to quinidine. In the future its ready availability at the patient's bedside could be a life-saving measure.

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SHORT COMMUNICATIONS

SECONDARY HYPERALDOSTERONISM IN CONSTRICTIVE PERICARDITIS*

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THIS IS a report of the finding of excess aldosterone excretion in a patient with constrictive pericarditis. A detailed review of the case history has been published by members of the Cardiovascular Unit of the Toronto Western Hospital,[1] so that only a brief summary will be given here.

The patient, a 24-year-old man, was admitted to hospital on July 24, 1959. He had become ill six weeks earlier with sore throat, cough and pain in the chest, followed later by shortness of breath, fullness in the abdomen, vomiting and decreased urinary volume. On examination his blood pressure was 112/105 mm. Hg and his heart showed a globular appearance on the chest radiograph. A Paul-Bunnell agglutination test was positive in dilution of 1:1792. Two weeks after admission he developed peripheral edema, bilateral pleural effusions and a paradoxical pulse. It was considered that infectious mononucleosis had involved his pericardial membranes, giving rise to effusion and cardiac tamponade. In August he had eight pleural and four pericardial aspirations. In September and most of October his condition was stationary, his blood pressure averaging 115/85 mm. Hg. On October 6 his cardiac output was found to be 11.1 litres per minute. Towards the end of October his condition deteriorated. He developed gross peripheral edema and ascites, his weight reaching a maximum of 206 lb. In November he was transferred to the Metabolic Unit and on November 16 was placed on a constant diet containing 17 mEq. of sodium.

In Table I are recorded his urine volume and sodium output and his "fasting" weight. Worthy of note is his response to the mercurial diuretic mercaptomerin (Thiomerin). With the first two injections on November 14 and 18 there occurred a diuresis, natriuresis and concomitant loss of weight. The response to a third injection on November 23 was neither as intense nor as prolonged, and to a fourth on November 26, very slight indeed. By this time the patient showed almost complete sodium retention.

Renal function studies revealed a blood nonprotein nitrogen value of 31 mg. % and a creatinine clearance (corrected to a surface area of 1.73 sq. m., based on his normal weight) of 95 l. per 24 hours (slightly below normal). His total serum proteins were 5.2 g. %, with albumin 46%. Accordingly there appeared to be neither a renal nor a hypoalbuminemic basis for his anasarca. It was reasoned that the marked sodium retention might be due to excess aldosterone secretion. Investigation was once again directed to the heart. A chest radiograph at this time revealed no significant cardiac enlargement. Cardiac output, however, had fallen from 11.1 to 4.2 l. per minute. Fluoroscopic examination showed almost total absence of cardiac pulsations. A diagnosis of constrictive pericarditis thus was made.

At operation performed on December 2, 1959 (by Dr. D. R. Wilson), the markedly thickened pericardium was stripped from the left side of the heart, the right ventricle and a portion of the right atrium. Because of the exposure employed it was not possible to reach the entry of the great veins into the right atrium. With the release of the constricting pericardium there was immediate improvement in cardiac function although moderate dilatation of the heart occurred. The postoperative course was uneventful. The pulse pressure which, preoperatively, rarely exceeded 30 mm. Hg, increased gradually to an average value of 55-60 mm. Hg. The chemical and clinical abnormalities progressively disappeared until the patient recovered his usual health.

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TABLE I.

Date	Body weight lb.	Urine Volume ml./24 hr.	Urine Sodium mEq./24 hr.	Urine Aldosterone µg./24 hr.*	Notes
Nov. 16/59	197	2230	92†		Diet: by calculation 2400 cal., 17 mEq. Na, 125 mEq. K, 97 g. protein.
17	195	1810	48†		
18	194	4960	395		Thiomerin®—2 ml. subcutaneously.
19	188½	2200	25		
20	188	1990	3.3		
21	188½	1940	1.4		
22	189	1780	1.2		
23	189¼	4390	230		Thiomerin—2 ml. subcutaneously.
24	184½	1860	5.4		
25	185½	1560	0.79		
26	186	2160	43		Thiomerin—2 ml. subcutaneously.
27	185½	1680	1.1		
28	186	1555	0.67	37.4	Right thoracentesis—1500 ml.
29	184	1480	0.64		
		Operation—December 2, 1959			
Dec. 2–11	Not on metabolic ward		<4		Diet: <10 mEq. Na/day.
12	154½	2680	2.4		Diet: same as in period Nov. 16-29.
13	155	2540	8.8		
14	155	2560	7.3	10.6	
15	155	2270	33		

*Average from a 48-hour urine collection.

†These values reflect the decreasing effect of a mercaptomerin (Thiomerin) injection given on November 14, prior to the balance study (weight loss was 8 lb.).

As indicated in Table I, a urinary aldosterone determination on a 48-hour specimen collected preoperatively averaged 37.4 µg. per day. Two weeks postoperatively the value was 10.6 µg. per day. The method employed was a modification of that of Gornall, Gwilliam and Hall[2] involving continuous extraction at pH 2, isolation of the aldosterone by paper chromatography, and measurement by ultraviolet absorption. On a salt intake of 6-8 g. this method gives values below 11 µg. per day; on a low salt diet the normal range is estimated to be 5-20 µg. per day. The preoperative value was high not only in relation to this rather wide range, but more significantly was 3.5 times the amount found postoperatively. From the work of Yates, Urquhart and Herbst[3] it could be argued that hepatic congestion had impaired aldosterone inactivation. Peterson[4] has found, however, that in liver disease the rate of metabolism of aldosterone is not significantly altered. In our experience an increased excretion of aldosterone usually reflects increased secretion, even in the presence of liver disease.[5]

It is interesting to speculate on the cause of the excess aldosterone excretion in this patient. Among the possible controlling mechanisms are volume or pressure receptors on either the arterial or venous side of the circulation.

In dogs with ascites secondary to thoracic inferior vena cava constriction, the rate of aldosterone secretion is markedly increased.[6-8] It is possible, therefore, that pericardial constriction of the inferior vena cava as it entered the right atrium might have been the cause of the increased aldosterone excretion in the present case. While this mechanism may be operative in some cases of constrictive pericarditis, it seems unlikely in the patient reported here, since at operation the surgeon was unable to reach the area of vena cava entry. Yet the removal of the pericardium from the left side of the heart, the right ventricle and only a portion of the right atrium resulted in rapid clinical improvement. This patient had a *generalized* increase in both the superior vena cava pressure, as evidenced by jugular venous distension, and in the inferior vena cava pressure, as shown by peripheral edema. In a recent review, Davis[9] states that elevated venous pressure is the one factor common to a variety of situations in which impaired cardiovascular function leads to edema. Yankopoulos *et al.*[7] have presented evidence that, in dogs with secondary hyperaldosteronism, a humoral agent stimulates the adrenal glands.

Another mechanism which could explain the hyperaldosteronism in this patient preoperatively is that proposed by Bartter and his associates.[8, 10] They have located in dogs a plexus of nerves situated at the junction of the thyroid and carotid arteries which, in response to a fall in intracarotid pulse pressure, causes an increased aldosterone secretion. The pulse pressure of our patient was consistently below 30 mm. until after pericardectomy, when it rose gradually over a two-week period to 60 mm. Aldosterone excretion fell from 37.4 to 10.6 µg. per day (a normal value for a low salt intake) in association with these changes. Two difficulties cited by Davis[9] stand in the way of this simple explanation. One is that denervation of the thyro-carotid junction region, or of the entire cervical carotid arterial system, does not prevent the increased aldosterone secretion which follows constriction of the thoracic inferior vena cava. The other is that patients with aortic stenosis may have a low pulse pressure for years without edema or evidence of hyperaldosteronism.

Recently the possibility of a receptor site within the kidneys has received support. Davis[11] has reported that aldosterone secretion fails to increase following thoracic inferior vena cava constriction if the kidneys are not in the circulation. Genest[12] has reviewed the relationship between the kidneys and the adrenal glands in the production of hypertension. Among the significant advances made by Genest's group in this field is the demonstration, confirmed by Laragh *et al.*,[13] that angiotensin has a powerful stimulating effect on aldosterone secretion. The pressure factors controlling release of renin from the kidney are not fully understood. Constriction of the inferior vena cava immediately above the renal veins does not seem to stimulate aldosterone secretion.[14] Control may depend therefore on stretch or pulsation in the afferent renal arterioles.

The hyperaldosteronism of the present patient was markedly reduced following pericardectomy. Most of the weight loss that occurred could be accounted for as fluid aspirated from the pleural and pericardial spaces during the operation and by continuous suction from an Emerson pump connected to the left pleural space in the immediate postoperative period. The absence of a sudden diuresis of sodium postoperatively can probably be attributed to these factors as well as to the low sodium diet the patient was given. It is suggested that the stimulus to aldosterone secretion diminished slowly as cardiac function improved. This study has shown that hyperaldosteronism may play an important role in the salt and water retention of constrictive pericarditis.

We are grateful to Drs. J. F. Paterson, S. C. Lenkei and D. R. Wilson for their help and co-operation.

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CUTANEOUS LEISHMANIASIS IN CANADA

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CUTANEOUS leishmaniasis (oriental sore) is a protozoal disease due to the inoculation of *Leishmania tropica* into the human skin by the bite of an infected sand fly—*Phlebotomus papatasii*—with the dog acting as a reservoir. As no species of Phlebotomus has ever been reported in Canada, it seems most unlikely that this disease will become endemic in this country.

Cutaneous leishmaniasis is endemic "in the coastal belt of the countries of the whole Mediterranean basin, across Turkey to the Caspian Sea, down through Iraq to the Persian Gulf, across Persia, Afghanistan, and Turkestan, across Pakistan and northern India, and in Ceylon. It occurs in West Africa from the Gambia to the Cameroons, and in East Africa—particularly in Ethiopia. Occasional cases have been recognized in other parts of West and East Africa, in Malaya, and in various parts of eastern Asia. Isolated cases have also been reported nearer Britain, in Portugal and northern Spain."[1]

*Presented at the 15th Annual Meeting of the Canadian Dermatological Association at the Seigniory Club, P.Q., in June 1961.

Clinically, the basic lesion is an inflammatory non-tender papule measuring up to 1.5 cm. in diameter. Central ulceration and crusting may occur. There is no palpable regional lymphadenopathy. Most lesions occur on exposed areas and autoinoculation may occur. The disease is self-limited, spontaneous regression occurring in a variable length of time. Biopsy reveals in the dermis a tuberculoid granuloma within which there are numerous protozoa, both intracellular and extracellular. The *Lieshmania tropica* may also be found in smears and may be cultured on Nicolle-Novy-McNeal (NNN) medium.[2] Old regressing lesions may show no parasites.

A most interesting feature of this disease is its extremely variable incubation period. Barberian[3] reported three cases of artificially induced oriental sore in which the incubation periods were 18, 30 and 56 months respectively. However, in the same article two other series are described in which the majority of cases of artificially induced leishmaniasis developed within six months. The difficulty in determining the incubation period in endemic areas is obvious, since patients can scarcely be expected to remember a small insect bite. However, additional evidence of a long incubation period is obtained from those who leave an endemic area with no lesion, but develop a lesion months or years afterwards. In Canada three groups may be

TABLE I.—CUTANEOUS LEISHMANIASIS IN CANADA

Case	*Age*	*Sex*	*Location*	*Residence in Canada (months)*	*Duration of lesion (months)*	*Endemic source*	*Treatment*	*Result*	*Comments*	
Trow[5]	56	M	Nose	—	5	Iraq	X-ray. Antimony i.v. and topically	Excellent	Medical missionary	
Forsey[6]	29	M	Forehead	—	5	Palestine and Italy	Emetine HCl intralesionally	Biopsy scar	Polish soldier	
Fidler[7]	30	M	Eyelid	41	1	Mediterranean war theatre	Penicillin. Healed in 14 months	Fine soft scar	Canadian soldier, 1941-45	
										Residence
Present series 1	24	F	Chin	60*	24	Chieti, Italy	Slice biopsy. Desiccation and curettage of base	"Little to see"	Immigrant	Ottawa
Present series 2	34	M	Infra-orbital	84*	12	Pescara, Italy	X-ray. Hot fomentations	Slightly indurated and erythematous	Immigrant	Cornwall
Present series 3	39	M	Forehead	—	5	Italy	CO_2 snow	Excellent	Immigrant	Ottawa
Present series 4	59	F	Forehead	2	1	Chieti, Italy	CO_2 snow	"Nothing left"	Immigrant	Ottawa

*Both patients denied leaving Canada since their arrival from Italy.

encountered in this situation: (1) travellers from endemic areas, (2) armed forces personnel returning from endemic areas, and (3) immigrants from endemic areas.

Seven cases of cutaneous leishmaniasis have previously been reported in Canada. Smith[4] reported briefly on four cases in which the endemic source was in Baghdad. Three of the four cases were in one family. The diagnosis was made by finding the organisms in smears. One patient was treated by superficial radiotherapy and intralesional neo-arsphenamine, with "marked scar formation". Two of the four patients had multiple lesions. The incubation periods varied from 1½ to 2 months.

The other three previously reported cases are those described by Trow,[5] Forsey[6] and Fidler.[7] These are included in Table I along with the author's four cases. Diagnosis was made by biopsy in all cases reported in Table I. All had single lesions. In the author's brief experience, treatment by CO_2 snow, desiccation and curettage, or superficial radiotherapy has been sufficient. It is recommended that these simpler methods be tried before using antimony or emetine products, as even local injections of these drugs may cause severe reactions.

In the endemic areas the problem of leishmaniasis is more complex. Marchionini,[8] in a report of 800 cases from Ankara, Turkey, described lesions of three types: (1) the local sore; (2) lesions due

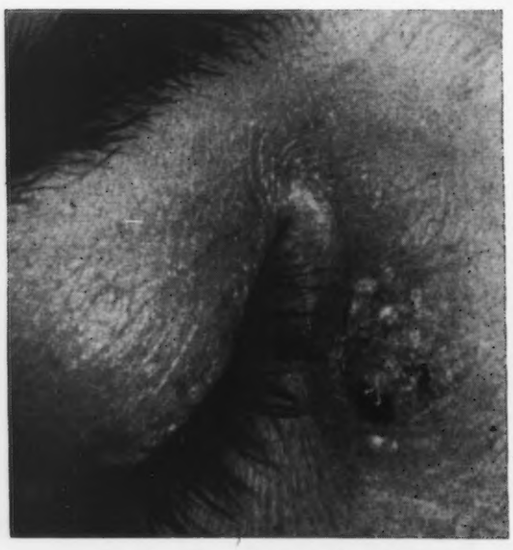

Fig. 1.—Case 2, present series.

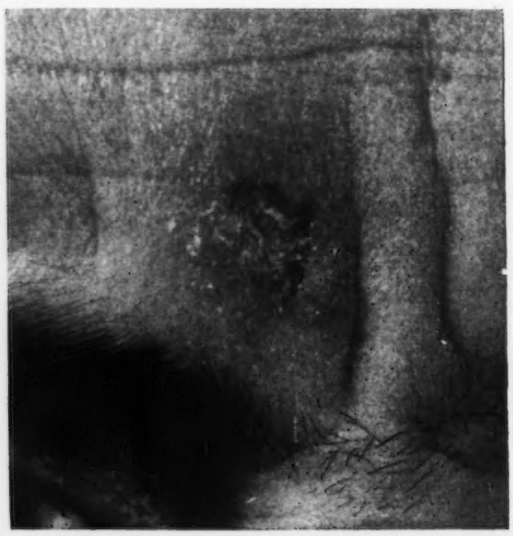

Fig. 2.—Case 3, present series.

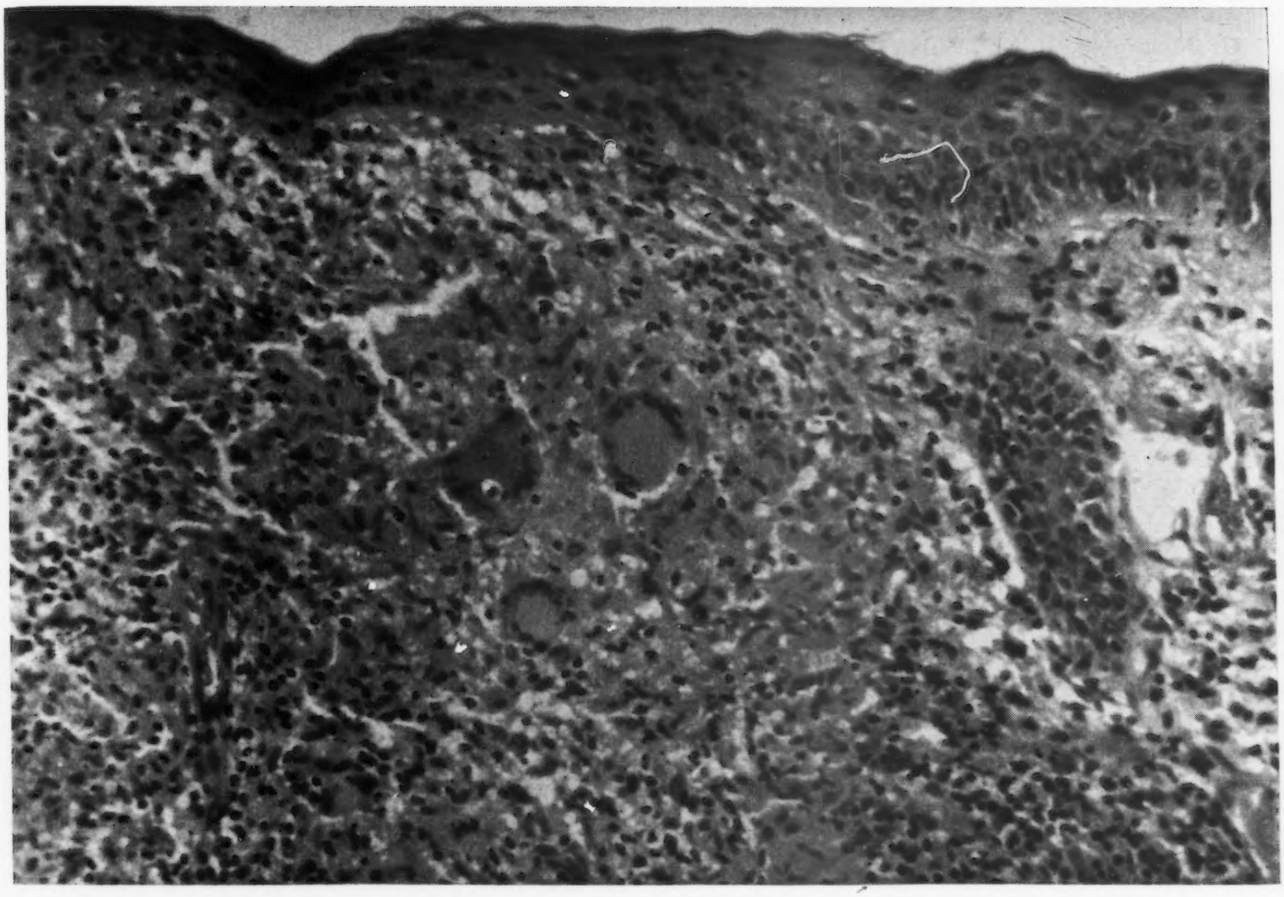

Fig. 3.—Case 3, present series. Low-power photomicrograph showing tuberculoid granuloma with giant cells in upper dermis. Leishmania are not visible at this power. All sections are stained with hematoxylin and eosin.

to blood or lymphatic spread, resembling those of lupus vulgaris; and, rarely, (3) a disseminated nodular variety. There is also a fourth type—a recurrent lesion called leishmaniasis recidiva cutis. Vaccination[9] with living protozoa on the inner aspect of the knee is an accepted procedure to prevent the formation of multiple scars on exposed sites. The vaccination does not always take and sometimes, even if it does, it does not provide complete immunity.

SUMMARY AND CONCLUSIONS

This article presents a brief review of the cases of cutaneous leishmaniasis previously reported in Canada and adds four new ones. The clinical features and treatment of the disease are briefly described. Travellers, armed forces personnel and immigrants from endemic areas may bring this disease into Canada, and it behooves physicians to be aware of it and not to be misled by its long incubation period.

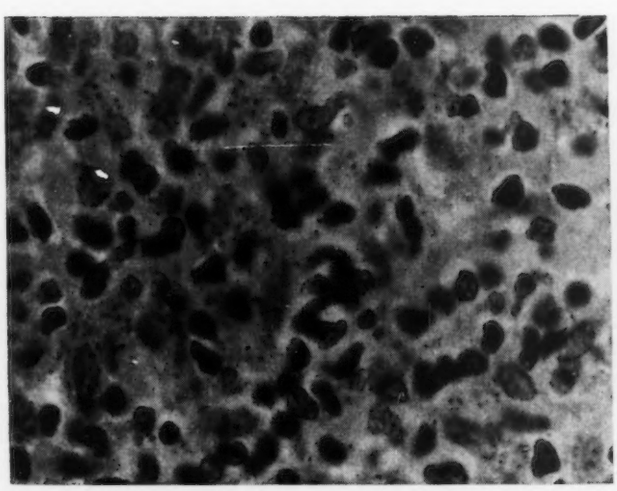

Fig. 4.—Case 3, present series. High-dry photomicrograph. Note numerous organisms, some of which appear to be extracellular.

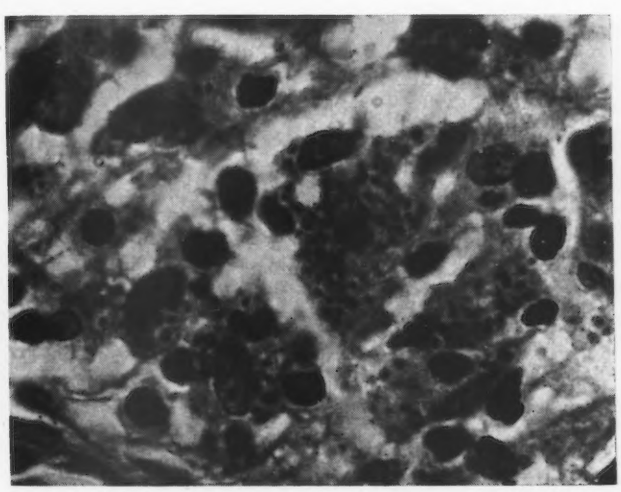

Fig. 5.—Case 4, present series. Oil immersion photomicrograph showing most Leishmania to be intracellular.

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ADDENDUM

Dr. Norman M. Wrong of Toronto has written to me of two cases of cutaneous leishmaniasis that he has observed in children of Italian immigrants. *Leishmania tropica* was found in both cases.

I am grateful to Drs. D. C. Montgomery, L. C. Neri and S. E. Grimes of Ottawa for their assistance in the preparation of this paper.

Mr. M. Smith of the Department of Photography, Ottawa Civic Hospital, took the photographs and photomicrographs.

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MEN AND BOOKS

MEDICAL SOCIOLOGY: A SELECTED CANADIAN BIBLIOGRAPHY

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THE PRACTICE of medicine involves not only the technical procedures and therapeutic skills of the physician, but also an understanding of social variables and their relationship to health. Recently, medical sociologists have begun to explore this latter aspect of medicine. In the past decade several hundred studies have been completed in the United States. The scope of this research has been broad and the topics covered have ranged from the organization of medicine as a profession to studies of the sociological implications of explicit diseases.

Several textbooks, articles and sourcebooks accurately outline the development of medical sociology and contain extensive bibliographies on completed projects. These general reference sources are listed in Appendix A.[1-11]

Medical sociology in Canada reflects in part this speciality's development in the United States. The references compiled here indicate that in Canada research has focused upon (1) medicine as a profession, (2) mental health and mental disorder, and (3) alcoholism. However, little or no research has been conducted on the organization of medicine and the hospital, the role of paramedical groups, the provision of medical care (both qualitatively and quantitatively), the sociological variables associated with the health of specific groups in the community (e.g. nationality groups, social classes and the aged), or the social epidemiology and etiology of somatic diseases. The relative absence of research in these areas may be partly explained by the limited number of sociologists employed in Canada. In addition, it is evident from the bibliography that research activity to date has been skewed in favour of those health problems which may appear to the health workers involved to be most amenable to sociological investigation, e.g. mental disorders and alcoholism. This sociological research void in Canada concerning many pertinent health problems poses a genuine challenge for future exploration.

The items in the bibliography (Appendix B[12-65]) represent (1) the work of Canadian members of the Section on Medical Sociology of the American Sociological Association, (2) studies by Canadian sociologists currently affiliated with liberal arts' colleges who are not members of the Section, (3) doctoral dissertations and post-doctoral field studies conducted in the United States by Canadians who are currently working in Canada, and (4) studies completed in Canada by American sociologists. All major indexes have been surveyed for pertinent references. Where a major piece of research has been reported in book form (e.g. Leighton's "Stirling County Study of Psychiatric Disorder and Sociocultural Environment"), complementary articles are omitted.

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PAGES OUT OF THE PAST: FROM THE JOURNAL OF FIFTY YEARS AGO

Those who would thwart the efforts made to require of our students a prolonged and efficient course of instruction in the preliminary sciences, appear, in my humble opinion, to assume that little further advance is possible in scientific medicine beyond that which it has already attained. We find that those who are at the present time making valuable contribution to our knowledge in practical medicine and surgery are those who have a keen appreciation of the value of such instruction as I have referred to, and, on the contrary, we expect little and we get little of value from those who are clinicians solely, and have little of the true scientific spirit. Surely we must train our students in such fashion that they will be adequately equipped to grapple with the problems which present themselves at the bedside, problems which are becoming more complex every day as the sum of our knowledge regarding the progress of disease increases.—A. Primrose: Address in Surgery to the 44th Annual Meeting of the Canadian Medical Association, *Canad. M. A. J.*, 1: 601, July 1911.

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THE SISTER PROFESSION

NURSING is starting its second century as a profession, for it was in 1860 that the school for nurses opened at St. Thomas' Hospital opposite the Houses of Parliament in London. This was the first school of nursing not connected one way or another with religious bodies and attached to a teaching hospital. It is the prototype of our present schools of nursing with which we are now so familiar that we take them for granted.

During the next 50 years Florence Nightingale's "girls" swept across the world, scarcely opposed (or so it seems to our eyes now, though it didn't necessarily look exactly that way at the time). When she died in 1910 there were a thousand or more schools of nursing modelled more or less on that at St. Thomas'. Here and there, of course, nurses had brushes with doctors, like the vivid affair at Guy's Hospital in the 1880's which burst upon the Victorian public simultaneously from the columns of the London *Times*, *The Spectator*, and the *Nineteenth Century*. The medical staff of Guy's were going to resign en masse unless Miss Bird, the new Nightingale matron, was dismissed. But Miss Bird wasn't dismissed. A very few of the older medical staff resigned and as Hector Cameron[1] shows, the doctors had no heart for the fight. So as far as external opposition was concerned, the establishment of the nursing profession was a walkover, for was it not led by the indomitable heroine of the Crimea who spoke with Viceroys, and at whose frown Cabinet Ministers trembled?

Inside the nursing profession, as Dr. Abel Smith[2] shows, it was and has been a very different matter. His "The History of the Nursing Profession" is one of those admirable books from the Kingswood Social History Series, which presents a very complex matter clearly, cogently, and with admirable brevity. Dr. Abel Smith has limited himself to the story of nursing in England, but this limitation has the advantage of allowing him to give a very well focused analysis of the development of nursing and the social setting in which this occurred. One hopes that his example will encourage historians of nursing in other countries, for there are features of Victorian England and subsequent English experience which do not necessarily apply elsewhere, so that one might be rash to generalize from this book in other countries.

Once again, Florence Nightingale's astonishing shrewdness, wisdom and good sense is apparent. True, she may have been too keen on almost military organization for nursing and this has later seemed embarrassingly rigid, but we must remember that most organizations in Victorian England were rigid and hierarchical. Anything "more democratic" would have seemed then to be anarchical and would not have worked. Florence Nightingale was sensible, sensitive and humane. Her original probationers were comparatively well paid, and although they were expected to go out in pairs, this seemed far less odd in the 1860's than it does now. At the beginning the course lasted one year. It seems to have been adequate and its impact on medicine and nursing was extraordinary.

Miss Nightingale hoped to attract farmers' daughters who liked looking after sick animals, but something very different happened. Within a decade or so the course had begun to swell and it soon reached a duration of three years and there it has stayed until today. The profession was rent by those who wanted higher and higher standards for their own sake, and those who felt that women with some nursing experience, although perhaps not the best, were better than none at all. The vicious circle engendered by this conflict has maintained a shortage of nurses ever since. At the same time nursing became almost an exclusively feminine profession—a distinction until that time reserved for prostitution. Men have still been relatively unsuccessful in nursing, although there is ample evidence of their competence and skill, and this in an age when the sexual bar to a particular occupation is deplored is very curious.

The contrast between the slow organic growth of medicine and astonishing synthesis of nursing is fascinating. It is hard to realize that the transition from Sarah Gamp to the ambitious, tireless and often very tiresome Mrs. Bedford Fenwick took less than 40 years. In 1884 the curvacious and chic Miss Ethel Gordon Manson became matron of St. Bartholomew's Hospital, one of the oldest in London. She was then 24 and had had only one year's training. In 1945 she was still campaigning indomitably for the cause she loved so much and understood so little. For over 60 years there was hardly a controversy in nursing in which she was not passionately engaged, and whose resolution she didn't succeed in making much, much more difficult.

Professor Goode of Columbia University notes that any emerging profession which is client-centred tends to develop a guild-like outlook and protect its members. He doesn't give much attention to the speed at which professions develop. Medicine, the church, the law and the military professions have grown very slowly and unself-consciously. With modern professions, of which nursing is an example, the idea of being a profession and not simply an occupation or a trade has a considerable influence on the way in which those who make up the profession see themselves, so that comparisons between older and newer professions are far from simple. It also raises the question of the relationship between the newer professions, the long established ones, and the government, for the old professions have a body of law and traditions which have accrued over the centuries.

Nursing was welcomed by the doctors, the government and the public generally, for with the great technical changes which were occurring in medicine and surgery, something more than simple home nursing was becoming necessary. But the new profession was often insensitive to the needs of the situation and unwilling to hasten slowly. Consequently, while the nursing profession in Britain insisted upon higher and higher standards, especially in the favoured teaching hospitals, the smaller hospitals were hard put to it to obtain even unskilled help. Only recently has proper attention been paid to the many essential but less well educated people on hospital nursing staffs whose presence has usually been looked upon askance, and if possible ignored.

Dr. Abel Smith's book is obligatory reading for all those concerned with the care of the sick and the running of hospitals.

Nursing everywhere seems to face very much the same problems as those found in Britain, and the establishing of university chairs and doctorates in nursing sciences has not solved the problems. Abel Smith points out that the greatly increased amount of marriage, and especially the earlier marriages of the last 50 years, is one of many factors making it harder to find nurses for hospitals. Perhaps the time is coming when men will have to claim equal rights from one of the two great professions from which they are usually excluded, or at least allowed only a minor place. With the rise of automation in offices and factories we may at last see a start to the solution of that huge improvization which nursing (and indeed medicine too) has been for so long. Great social forces, so great that we are hardly aware of them, are going to influence medicine and nursing enormously. As doctors we can never be unconcerned about our sister profession, either now or in the future. But since those stirring days at Guy's in the 1880's we've usually been sensible enough to keep our fingers out of nursing affairs. Yet as an older brother of a skilful and competent sister, we can perhaps urge her to remember that important as professorial chairs and Ph.D.'s may be, they are only a means to an end and that end is still in the main the effective care at the bedside of the sick person. Nursing, like medicine, has in it elements of practical art and applied science, and as in medicine, tact and wisdom are needed to strike a balance between the two.

H.O.

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MORE ABOUT PHYSICAL FITNESS

MUCH has been written of late, both in the scientific and lay press, concerning the inferiority of American children to their European counterparts in so far as physical fitness is concerned. This has been popularly attributed to the high degree of mechanization in America that has eliminated much of the physical activity which is still a part of normal living and recreation in Europe. To assess the validity of this thesis a group of Philadelphia research workers recently undertook a critical assessment of the physical fitness of 601 Philadelphia public school children between the ages of 8 and 18 years, and 111 university students 20 to 22 years of age. The results of a battery of tests, designed to measure quantitatively various parameters of physical fitness on these subjects, were compared with limited studies of a similar nature conducted in Germany and Sweden (Rodahl, K. *et al.*, *A.M.A. Arch. Environmental Health*, 2: 499, 1961).

The results of these investigations are of considerable interest in that, contrary to popular belief, they appear to indicate that the difference in degree of physical fitness between these selected groups of American and European children and young adults is not as definite or as marked as has been generally purported in previous pronouncements.

On the basis of these studies there was no evident difference between the physical work capacity of white and non-white subjects. In agreement with the findings of others, no appreciable differences in physical work capacity between boys and girls was evident up to the age of 10 to 12 years, beyond which the sex differential became pronounced. There was no statistically significant correlation between Intelligence Quotient and the results of the various physical performance tests employed in this study.

No appreciable differences were noted on comparing the data on the Philadelphia subjects with those obtained in a similar study conducted in Dortmund, Germany. On the basis of the measurements employed in this investigation however, Swedish subjects were, in general, superior in physical fitness. This was assumed to be attribut-

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able to the greater amount of physical training and activity practised by children and young people in Sweden. For example, Swedish housewives aged 20 to 29 years who engage in 30 minutes of physical training each week showed marked superiority in physical work capacity in comparison with that of Philadelphia women 20 to 22 years of age.

Statistically significant differences in body weight, height, muscle strength and physical work capacity were noted among different schools in the Philadelphia area and between various communities in Sweden. These regional variations in physical work capacity were attributed to differences in body weight of the subjects studied, though to what extent the discrepancies in body weight depend upon factors such as nutrition or genetic endowment remains to be investigated.

The authors of this report emphasized that in view of the fact that such significant differences in physical work capacity can be demonstrated between young people of different cities, and indeed between different schools in the same city, caution should be observed in comparing the state of physical fitness in one country with that in another. In addition, the particular parameters by which physical fitness is assessed may result in conflicting conclusions from different groups of investigators. In this regard, the authors of the Philadelphia report could demonstrate no correlation between results of the Kraus-Weber test for "minimum muscular fitness" (on which the majority of previous public pronouncements on this subject have been based) and the results of any of the physiological tests used in their study to assess physical fitness or physical work capacity.

It would now appear desirable to determine the type and amount of training required to produce significant improvement in physical work capacity at various age levels. Conceivably, the Royal Canadian Air Force physical fitness programs, scaled for various age groups and physique classifications and known respectively as the "5BX" and "10BX" (Basic Exercise) Plans for men and women, might serve as a focal point for such intensive studies in Canada.

A GUIDE TO BASIC RUSSIAN

A NUMBER of Canadian physicians who have visited the Soviet Union in the past few years have returned with particularly interesting and informative impressions of many aspects of present-day medicine in that country.[1-4]

To assist other members of the profession in Canada who may be planning visits to the U.S.S.R. the Executive Committee of the Canadian Medical Association last year authorized the General Secretary to conduct negotiations with the Soviet Ambassador to Canada to explore ways and means of facilitating the travelling of Canadian medical personnel to medical centres in Russia, and of Russian doctors in Canada. The outcome of this consultation with the Soviet Ambassador was reported in a previous issue of this journal.[5]

Because of the fact that the average Canadian visitor to the Soviet Union is likely to encounter difficulties with the native language of that country, and particularly with the unfamiliar Coptic characters of its alphabet, the editorial staff of this journal is pleased to present, as an additional service to members of the Canadian Medical Association, the following simplified Russian-English conversational guide© as it was originally published by J. M. Kucera in *The Saturday Evening Post* some years ago. This information is provided with the hope that it may prove of some practical value to the English-speaking tourist in day-to-day contacts during his sojourn in Russia.

RUSSIAN	ENGLISH
АНá.	Caught you, didn't I?
БАЛбИЕЧ.	I find your story difficult to believe.
НЕЧ ШАС!	May I have a word with you, sir?
ЧЗАН?	Certainly. What can I do for you?
ОЖАЧ	I find that perfectly agreeable.
ОБбЧбБбЧ! . . .	My, what a charming girl!
ЗСЯАМ, БЦБ! . .	I'm growing weary of your company

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PAGES OUT OF THE PAST: FROM THE JOURNAL OF FIFTY YEARS AGO

There is a tendency among certain members of our profession to underrate the value of laboratory work in the preliminary sciences, during the early years of our medical curriculum. They are constantly endeavouring to cut down the number of hours spent in that kind of work, because it is claimed that the time spent in elucidating certain complex problems, let us say, in chemistry, physics, or biology, using that term in its widest sense, might be more profitably spent in work having a more direct bearing on the practice of medicine. We hear it stated that our medical students should only get instruction in the preliminary sciences which they can directly utilize at the bedside. It would be interesting to have the programme of scientific courses drawn up in detail by those who hold such views. Where are restrictions to be placed? Could any one have predicted that the demonstration of the part played by the bacterium lactis in the souring of milk should have proved such an important link in the chain of development of modern surgery? And yet that demonstration by Lister was of fundamental importance in the early evolution of antiseptic surgery.—A. Primrose: Address in Surgery to the 44th Annual Meeting of the Canadian Medical Association, *Canad. M. A. J.*, 1: 601, July 1911.

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Letters to the Journal

THE PHYSICIAN AND PARA-MEDICAL PUBLICATIONS

To the Editor:

Dr. Godden for writing, and you for publishing, the information concerning *MD of Canada* (*Canad. M. A. J.*, 84: 1207, 1961) are to be congratulated.

As a psychiatrist I have naturally been interested in anything concerning psychopathology or psychiatry published in *MD of Canada*. Readers may be interested in correspondence I had with the editor of *MD of Canada* in November 1960, extracts from which follow:

To the Editor: November 11, 1960

"Recurrently in reading, I become a bit frustrated by the fact that the author is not mentioned. If his name were mentioned, one could refer to other works by him. For instance, I have been interested for some time in the work of Salvador Dali, and in your August number your contributor was able to condense a tremendous number of stimulating and intriguing views into a very short space, and although there are some excellent and certainly expensive reproductions included, there was absolutely no reference of any kind—not even to the publisher and date of publication of 'The Secret Life of Salvador Dali'.

"I think your journal would be greatly improved in the eyes of those who read it if your publishing policy were more in line with that which is usual in monthly journals inasmuch as authorship and references are included. Published in its present form, it seems too much like an advertisers' handout in which there is more of a tendency to obscure than to expose the truth."

From the Editor: November 22, 1960

"Since *MD of Canada* is staff researched and staff written, actually no one author is responsible for any article. It is therefore not possible for us to publish signed articles in the magazine. Space limitations and the general design of *MD of Canada* make it impracticable also for us to include bibliographic references, as is conventional in technical medical journals. The material published in *MD of Canada* is carefully researched, however, and we do strive for complete accuracy in our presentations."

In general, as physicians, our scientific interest is primarily in the journals of our general or specialist societies. Such journals have, of course, for a long time been perhaps the most important advertising media for drug companies, etc., and, at the same time, advertisements have been an important source of subsidy for the journals concerned. With increasing advertising by mail, and an increasing number of publications of, or subsidized by, drug manufacturing companies, the situation is altering, certainly not to the satisfaction of all physicians. There have been many pleas that the doctor should take a wider interest in the humanities. The present tendency of such publications, perhaps especially *MD of Canada*, may have the unfortunate result of seducing doctors from reading more serious monthlies and quarterlies which take pride in naming their contributors.

Doctors can still live only 24 hours a day—unlike the garage owner I pass on my way north who boasts that he is "open 25 hours a day"!

W. CLIFFORD M. SCOTT, M.D.
1516 Pine Avenue West,
Montreal, Que.,
June 6, 1961.

To the Editor:

I read Dr. Godden's recent letter with great interest. Accordingly today, on receiving a further unsolicited copy of *M.D. of Canada*, I have written asking to be removed from the mailing list. I intend to return unopened to the sender any future copies of this journal that I may receive.

E. G. WARBURTON, M.B., M.R.C.P.(Edin.)
P.O. Box 590,
Hamilton, Ont.,
June 14, 1961.

THE ACTION OF FLUORIDES

To the Editor:

Sodium fluoride should not have been chosen for fluoridation. It is a highly toxic, accumulative poison which will always remain so in any proportion so long as it lacks calcium.

To use sodium fluoride safely would necessitate the constant assurance that either in the primary water supply there be an overabundance of lime or that in our gastrointestinal systems there always be sufficient calcium to neutralize or cause reversion of the sodium into calcium fluoride before it reaches the blood stream.

Because it was chosen, it has been necessary for the proponents to confuse us with the vagaries of the ionic theory in order to try to make us believe that there is no medical difference between sodium fluoride and calcium fluoride. If there are any who would believe there is no difference, let them delve more deeply into this very important problem from a clinical point of view until they see the truth.

When the then editor of the *Canad. M. A. J.* wrote, as the last paragraph in an editorial on fluoridation in the issue of May 14, 1960, "Perhaps the final word on artificial fluoridation has not yet been said, but its safety has been established and further work is necessary to clarify its findings," he had in mind this danger in sodium fluoride.

If calcium fluoride had been used in the first place, there would not have been all the uproar about poison and now fluoridation would be an accomplished fact.

W. A. COSTAIN, M.B.
1567 Bathurst Street,
Toronto, Ont.

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Medical News from Parliament

MEDICAL NEWS FROM PARLIAMENT

On May 30, 1961, the Government brought in Bill C-99, an Act to Amend the Food and Drugs Act with regard to control of Barbiturate and Amphetamine Drugs.

The purpose of the Bill is to amend the Food and Drug Act to add a section providing for more effective control of the "goofball" drugs. These are the drugs listed in Section G of the Food and Drugs Act and are as follows:

1. Amphetamine and its salts.
2. Barbituric acid and its salts and derivatives.
3. Methamphetamine and its salts.

The new Act provides for licensing of persons dealing with these drugs; makes it necessary to keep special records of them; and limits the importation, manufacture and distribution of such drugs for medical purposes.

In the past few years there has grown up an increasing illicit trade in "goofballs". This has been particularly evident in the larger urban areas, especially Montreal and Vancouver. It has been found that the major source of supply to this illicit market has not been at the retail level, but rather at the manufacturing, importing and distributing level.

The Minister the Honourable J. W. Monteith said in his opening statement:

"I should like to say at this point that while authority will be provided in the law requiring the keeping of special records by all persons who deal in these substances—and this could well include members of the professions—there is no present intention that practitioners will be required to keep any special records in addition to those which are normally involved in good medical practice. Retail pharmacists will be required to keep special records but these will not be other than those normally required in good pharmaceutical practice. At the same time, authority will be included in the regulations to require a particular individual to furnish explanation as may be necessary respecting his use of these substances and to provide for such information, if necessary, being furnished to the provincial licensing authorities responsible for his right to practise.

"The new Bill is a step forward in controlling abuse of these drugs, especially the vicious abuse of peddling them to the youth of this country.

"I am sure that the medical profession will welcome it and co-operate to the fullest extent."

H. M. HORNER, M.D., M.P.,
June 7, 1961 Jasper-Edson

MEDICAL NEWS IN BRIEF

BLOOD GROUPS AND PEPTIC ULCER

Heredity is concerned in the development of peptic ulcer. Duodenal and gastric ulcers are inherited independently. The inheritance of the liability to develop ulcer is polygenic, i.e. due to genes at several different loci on different chromosomes. Two of the genetic loci concerned in duodenal ulcer are known: the locus for the ABO genes (which determine the ABO blood group of the individual), and the locus for the secretor genes. Although in the case of gastric ulcer the position is less certain, it is likely that the ABO and secretor genes are concerned also in at least some types of gastric ulcer. A third set of genes, that controlling the Lewis antigens, may be involved in duodenal ulcer.

In a discussion of this subject McConnell (*Practitioner*, 186: 350, 1961) states that persons of blood group O are about 35% more liable to develop duodenal ulcer than are those of group A, B, or AB, and that "non-secretors" (people without ABO antigens in their saliva) are about 50% more liable to develop duodenal ulcer than "secretors" (people with ABO antigens in their saliva). The two characters, blood group and secretor status, are inherited independently. Since there is no apparent difference between blood groups A, B and AB as regards susceptibility to the development of peptic ulcer, these groups can be combined. The population can then be divided into four different types of individuals, depending upon blood groups and secretor status. Comparing the frequency of these types in a series of patients with duodenal ulcer with the frequencies in the general population, it is found that people who are both group O and non-secretors are most liable to the disease, 2½ times more liable than secretors of group A, B and AB who are the least susceptible. In a series of patients with gastric ulcer it was found again that group O and non-secretion seems to increase liability to this disease but only to about half the extent that these factors do in the case of duodenal ulcer.

The mechanism by which these blood-group and secretor genes influence susceptibility to duodenal and gastric ulcer is unknown. Although there are several possibilities, the liabilities and protections conferred by these antigens are most likely based on immunological processes.

(Continued on advertising page 23)

MEDICAL FILMS

THE FILMS listed below are held in the National Medical and Biological Film Library and are distributed by the Canadian Film Institute, 1762 Carling Avenue, Ottawa 3, Ont. The evaluations have been prepared by Canadian specialists in the subjects of the films, under the Medical Committee of the Scientific Division of the Institute, which is headed by Dr. G. H. Ettinger.

Nurse Midwifery—sound; colour; 37 minutes.

Produced by Alpha Film Productions for the Maryland State Department of Health.

Description.—The film follows the education and first experience in practice of a nurse midwife. Leaving her job in a rural health department, she takes training in one of the few schools of midwifery in the United States and returns to work in the obstetrical clinic run by the health department. The film then describes her duties before, during and after the home delivery of a multiparous patient with previous experience of this method. The controlling function of the clinic medical and nursing personnel is also shown.

Appraisal (1960).—This instructional and inspirational film was intended to show the training and duties of a nurse midwife. In spite of the very sketchy sequence showing training and not showing or describing the nursing set-up in detail, the film is generally good. The level of obstetrical care is good. It is accurate and interesting. Recommended for nurses. Suitable for general practitioners and medical students in clinical years. Unsuitable for specialists and non-professional audiences.

Availability.—National Medical and Biological Film Library ($6.00). For purchase apply to Alpha Film Productions, Baltimore, Md.

Congenital Atresia of Esophagus—1957; sound; colour; 22 minutes.

Produced by the Department of Surgery, Children's Memorial Hospital, Chicago. Technical advisers: William L. Riker, Arthur DeBoer and Willis J. Potts.

Description.—The diagnosis and surgical treatment of the condition are outlined and the results in 140 patients over an 11-year period are summarized. A brief outline of the pathological anatomy shows that early diagnosis can be made from the observation of excessive salivation in a newborn. Passage of a catheter and x-ray of the fistula using lipiodol are confirmatory. Treatment is by isolation of the fistula and blind pouch with re-construction of the esophagus. Postoperative care is described, and this is followed by an analysis of results of their technique.

Appraisal (1959).—The film is recommended for nurses and general practitioners. As a few important facets of the subject were not dealt with, it was judged a little behind the times, though a valuable film giving the results of extensive experience. Suitable for specialists and medical students in clinical years. Colour and sound good. Unsuitable for non-medical audiences.

Availability.—National Medical and Biological Film Library ($4.00). For purchase apply to: Educational Film Distributors, 577 Jarvis Street, Toronto, Ont.

Action of the Human Heart Valves—1956; sound; colour; 23 minutes.

Produced by Ohio State University for the Central Ohio Heart Association. Technical advisers: Karl P. Klassen, Charles V. Meckstroth and Robert H. Albertin of the Division of Thoracic Surgery, Ohio State University Health Center.

Description.—Normal valvular action is demonstrated in a fresh specimen. Examples of the following pathological conditions are then shown, and the degree of departure from the normal is demonstrated, using a water flow apparatus to simulate intracardiac conditions: (1 and 2) mitral stenosis with insufficiency, (3 and 4) pulmonary stenosis, (5) aortic stenosis with insufficiency, (6) aortic stenosis, (7 and 8) mitral stenosis, (9) mitral stenosis with insufficiency, (10 and 11) aortic stenosis. A view of the normal valve in action often precedes. The effect of the lesion on function is explained and the effectiveness or otherwise of current surgical techniques demonstrated.

Appraisal (1959).—Demonstrations of each valve in the normal and abnormal states are beautifully shown. Not all varieties of insufficiency recognized today are illustrated. Use might have been made of slow motion at times, and murmurs typical of each condition co-ordinated with the visuals would have been valuable. The photography and sound are excellent and the film is unique.

Recommended for medical students in clinical years. Suitable for medical specialists, medical students in preclincal years, nurses, general scientific audiences.

Availability.—National Medical and Biological Film Library ($4.00). For purchase apply to: Ohio State University, Department of Photography, Brown Hall, Room 4, Columbus 10, Ohio.

The Larynx and Voice. Part I: The Function of the Normal Larynx—1956; sound; colour and black and white; 20 minutes.

Produced by the Voice Research Laboratory, Northwestern University. Technical advisers: Paul Moore, Ph.D., and Hans von Leden, M.D.

Description.—This film demonstrates the structure of the larynx, the movements of the arytenoids and vocal cords at normal and ultra-high speeds. A model is used to show the cartilaginous structures. The lateral gliding movement of the arytenoids demonstrated in the film is pointed out as a divergence from previous ideas of their action. The female and male larynx are then seen in a variety of actions. High-speed sequences at from 2000 to 5000 frames per second show details of movement of the vocal cords and associated structures.

Appraisal (1960).—This is a unique film both from the point of view of photographic technique and for what it demonstrates as the actual action of the arytenoids. The commentary is accurate and interesting and the presentation clear. Recommended for specialists and general scientific audiences. Suitable for general practitioners, medical students in the clinical years.

Availability.—National Medical and Biological Film Library ($4.00). For purchase apply to: William & Harriet Gould Foundation, Chicago, Ill.

The Prevention of Disability in Rheumatoid Arthritis—1961; 16 mm; sound; colour; 27 minutes.

Produced under the direction of the National Medical Advisory Board of the Canadian Arthritis and Rheumatism Society.

Description.—This new film, made at the Toronto General Hospital, outlines the latest developments in the treatment of arthritis. It presents a balanced program of treatment effective in all stages of the disease, and illustrates special techniques useful in dealing with more severe complications. The film emphasizes the essential role of the family physician in the prevention of disability. Designed primarily for showing to the medical profession, the film contains valuable information for nurses, physiotherapists, occupational therapists, and members of other health professions.

Availability.—Prints are available, on loan, from any of the Society's Division Offices, as well as the National Office, 900 Yonge Street, Toronto 5, Ont.

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INFORMATION FOR CANADIAN DOCTORS ON

FINANCIAL ASSISTANCE AVAILABLE FOR GRADUATE OR POSTGRADUATE MEDICAL STUDY

in

CANADA - UNITED STATES - EUROPE

EIGHTH AND FINAL PART*

Through its Journal, The Canadian Medical Association is pleased to provide up-to-date information on financial assistance that is available to facilitate the graduate and/or postgraduate medical education of Canadian doctors. Please refer to other issues of the Journal, if the subject in which you are interested is not listed herein.

Unless otherwise indicated, the value of the awards will be quoted in the currency of the country mentioned. As entry regulations into a foreign country vary, it is recommended that the applicant for postgraduate study first investigate all details through the Embassies of the foreign countries concerned. Applicants should satisfy themselves whether medical registration in the jurisdiction of the award is or is not a requirement to hold the postgraduate post in the country selected.

In so far as entry into the United States is concerned, simply communicate with the U.S. consular office nearest your place of residence. These offices are located in the following cities: St. John's, Newfoundland; Halifax, Nova Scotia; Saint John, New Brunswick; Quebec, Quebec; Montreal, Quebec; Ottawa, Ontario; Toronto, Ontario; Windsor, Ontario; Winnipeg, Manitoba; Calgary, Alberta; Edmonton, Alberta; and Vancouver, British Columbia.

It is understood that a Canadian citizen entering the United Kingdom must have a valid passport but that no visa is necessary. Application forms for passports can be obtained at any large Canadian Post Office and should be completed and sent to the Chief Passport Officer, Ottawa, Ontario.

Name of Award	Field of Study	Where Tenable	Value	Number Available	Duration	Conditions	Apply to
TUBERCULOSIS — CANADA							
The Alberta Tuberculosis Association Fellowship	Thoracic diseases	Alberta	$1200	One	One year	Available to recent graduate who is eligible for licence to practise	Administrator of Student Awards, University of Alberta, Edmonton, Alta., by March 1
McGill University: Harrison Watson Scholarship	Research in field of tuberculosis or other diseases of an allied character	McGill University: if scholar is graduate in medicine of McGill, work may be undertaken at McGill or elsewhere	$1500	One	One year (renewable)	Open to graduates in medicine or holders of M.Sc. or Ph.D. degree	Secretary, Faculty of Medicine, McGill University, Montreal, P.Q., by February 1
TUBERCULOSIS — UNITED KINGDOM							
Clare College, Cambridge: Harrison Watson Studentships	Research into the causes and cure of tuberculosis and/or other diseases of an allied character	Must be in Cambridge (otherwise unspecified)	Junior Studentship, £500 to £750 per annum; Senior Studentship, £800 to £1000 per annum; exceptionally, more	One Junior or one Senior	Junior Studentship, three years; Senior Studentship, one to three years	Successful candidate must become member of Clare College, Cambridge	The Master, Clare College, Cambridge, England
Cecil Prosser Research Scholarship	Research in tuberculosis	Welsh National School of Medicine (permission may be given to spend some time elsewhere)	£250, plus equipment and travelling expenses	One, every three years	One year (renewable)	Available to candidates holding a degree in arts, science or medicine of an approved university or holding a registrable qualification for the practice of medicine; must have pursued cognate studies and shown ability for research in the field	The Registrar, University of Wales, Cardiff, Wales, by September 1
Liverpool University: Ridgway Fellowship	Research in some branch or branches of tuberculosis or crippling diseases of children	The University or in hospitals or other institutions approved by the Faculty of Medicine	Approx. £400	One	One year (renewable for a second)	Candidates must be graduates in medicine of an approved university or hold registrable qualifications	The Dean, Faculty of Medicine, University of Liverpool, Liverpool 3, England, before June 27
Canadian Tuberculosis Association: Overseas Exchange Scholarship	Tuberculosis control in Great Britain	United Kingdom	$900	One	Three months	Open to a senior clinician engaged in the services of tuberculosis and respiratory diseases	Executive Secretary, Canadian Tuberculosis Association, 265 Elgin Street, Ottawa 4, Ont.

*See also page 1038, May 6; page 1092, May 13; page 1148, May 20; page 1214, May 27; page 1397, June 17; page 1457, June 24; page 47, July 1.

Reprints of the complete listing of sources of financial assistance for graduate or postgraduate medical study are available from the Public Relations Department, Canadian Medical Association, 150 St. George Street, Toronto 5, Ont.

Name of Award	Field of Study	Where Tenable	Value	Number Available	Duration	Conditions	Apply to
VENEREAL DISEASES — UNRESTRICTED							
British Medical Association: Insole Memorial Scholarship	Research into the cause and cure of venereal diseases	Unspecified	£250	One, every two years	One year (renewable)	Preference given to members of the medical profession. Candidates not necessarily required to devote all of their time to research work	British Medical Association, Tavistock Square, London, W.C.1, before March 1
UNRESTRICTED — AUSTRALIA							
A. E. and F. A. Q. Stephens Postgraduate Research Fellowship		University of Sydney	£850	One	One year (renewable)	Available to nationals of all countries; must be university graduates	The Registrar, University of Sydney, N.S.W., Australia, by September 30
UNRESTRICTED — DENMARK							
Danish Government Scholarships		Denmark	4515.- Danish kroner	Three	Approx. eight months	Available to candidates from the British Commonwealth who are graduates of or have studied at a university or institutions of university standard in the British Commonwealth	The Director, Universities Department, the British Council, 65 Davies Street, London, W.1, England
UNRESTRICTED — FRANCE							
French Government Postgraduate Awards		France	400 nouveaux francs per month; plus tuition; plus refund for lodging if rent exceeds 100 nouveaux francs per month; plus 50% of travel expenses if award is held for one academic year		One month to one or two years	These awards are designed to permit young candidates of all disciplines to improve or to specialize; age limit 30 years	Cultural Counsellor, French Embassy, Ottawa, Ontario, through your university
UNRESTRICTED — GERMANY							
German Academic Exchange Service Scholarships		German Federal Republic or Berlin (West)	350 German marks per month; tuition plus transportation from the port of embarkation in Canada to place of study	Unspecified	Twelve months (renewable)	Candidates must be graduates of a university or have completed at least two years of university studies; age 20-30	German Embassy, Ottawa, Ont.
Alexander von Humboldt Fellowships		German Federal Republic or Berlin (West)	600 German marks per month; tuition fees, and transportation at least from German frontier to University	Restricted number	Ten months (renewable)	Postgraduate students with academic experience in teaching or research work at institutions of higher learning; age 25-35. Awarded to carry out a specific research project	German Embassy, Ottawa, Ont.
UNRESTRICTED — ISRAEL							
The N. J. Klausner Memorial Scholarship and/or Research Fellowship	Unrestricted	The Hebrew University, Jerusalem, Israel	$1500	Unspecified	One academic year	Candidates must have reached their 18th birthday by October 15 of the year of application; must have completed one year of university or its equivalent, and must be able to fulfil the entrance requirements of the Hebrew University in their chosen fields of study	Dr. Samuel Cass, National Chairman, Youth and Education Committee, Canadian Friends of the Hebrew University, 2025 University St., Montreal 2, P.Q., before May 25
UNRESTRICTED — NETHERLANDS							
Netherlands Government Scholarships		Netherlands	Approx. $790 with exemption from university fees (approx. $85)	Two	Ten months	Candidates must be pursuing graduate or postgraduate studies	Royal Netherlands Embassy, 12 Marlborough Ave., Ottawa 2, Ont., before June 1

Name of Award	Field of Study	Where Tenable	Value	Number Available	Duration	Conditions	Apply to
UNRESTRICTED — JAPAN							
Japanese Government Foreign Scholarship	At the choice of the student (open)	Japan	20,000 yen (approx. $56 monthly) plus tuition fees	One or two annually (this number is reviewed annually and may be changed from time to time)	Two years	Canadian citizen under 35 years of age holding a B.A. degree or proof of an equivalent academic achievement	Embassy of Japan, Ottawa, Ont. Consulate-General of Japan, Montreal, P.Q. Consulate of Japan, Toronto, Ont. Consulate of Japan, Winnipeg, Man. Consulate of Japan, Vancouver, B.C.
UNRESTRICTED — SPAIN							
Spanish Government Scholarships		Spain	3000 pesetas plus tuition and 1500 as an allowance upon arrival in Spain	Three	Nine months	Available to undergraduate Canadian students; must be recommended by the university he is attending or from which he is graduated	Spanish Embassy, Ottawa, Ont.
UNRESTRICTED — SWEDEN							
Swedish Government Fellowship	Graduate studies	Sweden	Living expenses plus tuition	One	Nine months	Canadian graduate students	Canadian-Scandinavian Foundation, 3425 University St., Montreal 2, P.Q.
Swedish Institute Scholarship	Graduate studies	Sweden	Living expenses plus tuition and travel ($450)	One	Nine months	Canadian graduate students	Canadian-Scandinavian Foundation, 3425 University St. Montreal 2, P.Q.
UNRESTRICTED — SWITZERLAND							
Swiss Exchange Scholarships		Switzerland: any of the nine universities	Usually tuition or a sum of money to facilitate study in Switzerland	Unspecified	Usually two semesters	Open to graduates of Canadian universities with sufficient knowledge of French or German to follow courses in these languages. Candidates should be recommended by their own university, which should be prepared to offer facilities for a Swiss student in exchange. The Swiss Embassy in Canada forwards the applications for consideration by a Swiss Committee	Further information from the Embassy of Switzerland, Ottawa, Ont.
UNRESTRICTED — UNITED KINGDOM							
Sir James Knott Fellowship		King's College, Newcastle-upon-Tyne	£500 per annum	Two	Two years	Available to nationals of all countries	The Registrar and Secretary, King's College, University of Durham, Newcastle-upon-Tyne 1, England
I.O.D.E. Postgraduate Overseas Scholarship (Imperial Order Daughters of the Empire)		United Kingdom	$2000	Nine (one for each province of Canada, except Newfoundland.	One year (renewable)	Available to Canadian nationals; age 19 to 26; must be graduate of a Canadian university and have done or be doing postgraduate work. On completion of studies recipients are expected to return to Canada to continue their work	Mrs. R. C. Bennett War Memorial Secretary, I.O.D.E., 182 Lowther Ave., Toronto 4, Ont., by October 15
Frank Gott Scholarship		University of Leeds	Approx. £80	One, every two years (next available in 1961)	Two years	Available to **men** students from the British Commonwealth for postgraduate study or research. Must be honours graduates and provide evidence of British and Christian parentage	Registrar, The University of Leeds, Leeds 2, England, by May 1
University of Cambridge Dominions Studentships		King's College, Cambridge	Total emoluments from all sources £500 and approved fees	One	Two years	Available to a graduate of a Canadian university with a preference to Toronto	Provost and Vice-Chancellor of Trinity College, University of Toronto, Toronto, Ont.
University of Cambridge Fellowship		University of Cambridge	£300 plus partial maintenance	One	One year	Available to men. Candidates must have held teaching or research post in own university and possess high academic qualifications	The Master, St. John's College, Cambridge, England, by April 17

Name of Award	Field of Study	Where Tenable	Value	Number Available	Duration	Conditions	Apply to
UNRESTRICTED — UNITED KINGDOM							
British Council Travel Grants	Unrestricted	United Kingdom, Australia, Hong Kong, Uganda, Singapore, Malta, Rhodesia, West Indies	Covers transportation	Unspecified	(a) and (c) usually minimum of six months, (b) usually four to six weeks	Available to (a) university teachers on recognized study leave; (b) distinguished scholars invited by universities for short visits; (c) postgraduate university research workers holding research grants	(a) and (c) Principal of candidate's own university for transmission to the Secretary, Committee for Commonwealth University Interchange, c/o British Council, 65 Davies Street, London, W.1, by December 31 for (a) and March 31 for (c); (b) Principal of the inviting university should send particulars of the proposed visit to above address by December 31
University of Manchester Fund (The "Toronto" Fund)	Postgraduate studies and/or research	University of Manchester	Maximum of £100	Unspecified	Unspecified; normally one year	Available to Canadian university graduates, with preference given to graduates of the University of Toronto	The Registrar, University of Toronto, Toronto 5, Ont.
The 1940 Toronto Fund (Oxford)	Postgraduate studies and/or research	Oxford University	Maximum of £500	Unspecified	Unspecified; normally one year	Awarded to members of the University of Toronto who wish to go to Great Britain for the purpose of study, research or any general educational purpose	The Registrar, University of Toronto, Toronto 5, Ont.
Raymond Priestley Fellowship	Postgraduate studies and/or research	University of Birmingham	£450 per annum, plus the cost of return passage from Canada	One every three years	Normally three years	Available to graduates of the University of Toronto, with preference given to those who have already shown some capacity for and interest in research	The Registrar, University of Toronto, Toronto 5, Ont., or The Registrar, The University, Birmingham 15, England
British Council Scholarship		United Kingdom	At Oxford and Cambridge: £515 and fees; in London £440 and fees; elsewhere £410 and fees. Travel to and from. and approved travel within, the U.K. is paid and allowance of up to £15 given for books, etc.	Approx. 350 (usually three for Canada)	One academic year (ten months) or two academic years (twenty-two months)	Candidates must return to own country at end of course of study; age preferably 25 to 35	The British Council Liaison Officer, 77 Metcalfe Street, Ottawa 4, Ont.
McGill-Glasgow Exchange Fellowship		Glasgow University	Maintenance, tuition, $500 towards transportation, and grant of £50	One	One academic year	Available to graduates of McGill University who wish to take postgraduate work at Glasgow University	The Registrar, McGill University, Montreal, P.Q., before February 1
UNRESTRICTED — UNITED STATES							
Guggenheim Fellowships	Research in any field of knowledge	U.S.A.	Grants adjusted to needs and resources	Usually more than six	Usually twelve months; in special cases for shorter periods	Age normally under 40. Awarded to men and women who have demonstrated unusual capacity for productive scholarship	Mr. Henry Allen Moe, Guggenheim Memorial Foundation, 551 Fifth Avenue, New York 17, N.Y., by October 15
University of Illinois Assistantships and Fellowships	Basic science	University of Illinois	$1500 and up	Ten	One academic year (renewable)	Available to graduate students from outside U.S.A.	Graduate College, Chicago Professional Colleges, University of Illinois, Chicago 12, Ill.
Yale University Scholarships and Fellowships		Yale University	Unspecified	Unspecified	One academic year (renewable)	Available to qualified students from all countries; graduate, undergraduate and professional	Yale University, New Haven, Conn.
University of Chicago Fellowships		University of Chicago	Max. $1500	Unspecified	One academic year (renewable)	Available to graduate students from outside the U.S.A.	Office of Admissions, University of Chicago, Chicago 37, Ill., by February 15

Name of Award	Field of Study	Where Tenable	Value	Number Available	Duration	Conditions	Apply to
UNRESTRICTED — UNITED STATES							
American Association of University Women International Fellowships		U.S.A.	Varies; grants cover essential expenses for period of study	Unspecified	Usually one academic year	Available to women whose Federations of University Women are members of the International Federation of University Women	Miss Jean Royce, Canadian Federation of University Women, 52 Queen's Crescent, Kingston, Ont.
UNRESTRICTED (Other than Canada)							
Margaret McWilliams Fellowship		Countries other than Canada	$2000	One	One academic year	Available to women graduates of Canadian universities; age limit 35	Dr. Mary Winspear, 18 Severn Avenue, Westmount, P.Q.
UNRESTRICTED (Other than recipient's country)							
International Federation of University Women: (a) Ohio State Fellowship (b) Mary E. Woolley Fellowship (c) Virginia Gildersleeve Fellowship (d) Helen Marr Kirby Fellowship (e) Alice Hamilton Fellowship (f) Ida Smedley Maclean Fellowship (g) A. Vibert Douglas Fellowship		Any country other than that of the recipient	(a)–(e) inclusive $2500 (f) £850 (g) $2000	One of each	One academic year	Available to members of national associations of University Women affiliated with the International Federation of University Women; must hold degree or diploma from recognized university or institution of university standing; senior candidates (age 28 to 55, preferably under 45) must have published results of independent research work within last 5 years; junior candidates (age 21 to 28) must have been engaged in research work for at least one year and shown ability to carry out independent research work	International Federation of University Women, 17A King's Road, Sloane Square, London, S.W.3, England
UNRESTRICTED							
Canadian Federation of University Women Junior Fellowship			$1500	One	One academic year	Available to women graduates of Canadian universities who are residents in Canada; age limit 25; preference given to students who have studied in only one university and who desire to continue their studies in another	Dr. Mary Winspear, 18 Severn Avenue, Westmount, P.Q.
Canadian Federation of University Women Professional Scholarship			$1000	One	One academic year	Available to women graduates of Canadian universities; age limit 35; preference given candidates who have completed one or more years of professional work	Dr. Mary Winspear, 18 Severn Avenue, Westmount, P.Q.
McGill Delta Upsilon Memorial Scholarship			$1750	One	One academic year	Available to graduates of McGill University who need financial assistance for further study	Registrar, McGill University, Montreal, P.Q., before April 1
A. Vibert Douglas Fellowship			$2000	One	One academic year	Open to senior or junior candidates; subject to the same regulations as the Fellowships given by the International Federation of University Women	International Federation of University Women, 17A King's Road, Sloane Square, London, S.W.3, England, made by November 1 Forms may be obtained from Dr. Mary Winspear, 18 Severn Avenue, Westmount, P.Q.
University Women's Federation Travelling Fellowship			$2500	One year	One academic year	Available to women graduates of Canadian universities; age limit 35; preference given to candidates who have completed at least one or two years of graduate study and have a definite course of study for research in view	Dr. Mary Winspear, 18 Severn Avenue, Westmount, P.Q.

Name of Award	Field of Study	Where Tenable	Value	Number Available	Duration	Conditions	Apply to
UNRESTRICTED							
Marty Memorial Scholarship			Approx. $2000	One	One year (renewable)	Available to female candidates who are graduates of Queen's University and who hold a Master's degree from Queen's University or elsewhere	Registrar, Queen's University, Kingston, Ont., before December 31
CARDIOVASCULAR RESEARCH							
National Heart Foundation of Canada	Cardiovascular research	Unrestricted, but normally in Canada	$3000 and up, depending on training and experience	Variable	One year (renewable)	Open to qualified investigators who must arrange for admission to an approved institution to devote full-time to research	National Heart Foundation of Canada, 501 Yonge Street, Toronto 5, Ont.
Ontario Heart Foundation	Cardiovascular research	Ontario	$3000 and up, depending on training and experience	Variable	One year (renewable)	Candidates must hold an M.D. or Ph.D. and devote full time to research	Ontario Heart Foundation, 1323 Bay Street, Toronto 5, Ont.

THE JOHNS HOPKINS UNIVERSITY SCHOOL OF MEDICINE
725 North Wolfe Street,
Baltimore 5, Maryland

The School of Medicine has an active program of post-doctoral medical education. A limited number of fellowships that cover tuition or tuition and living expenses are available from sources within the School. Other fellowships may be obtained from outside agencies.

Fellowships are customarily awarded for a period of one year, usually starting on July 1, and may be renewable for one or more years. Postgraduate study in both clinical and pre-clinical sciences may be pursued.

For further information, inquiry should be made to the Director of one or more of the following Departments:

Anatomy
Biophysics
Gynecology-Obstetrics
History of Medicine
Medicine
  Dermatology
  Neurological Medicine
Microbiology
Ophthalmology
Pathology
Pediatrics
Pharmacology and Experimental Therapeutics
Physiological Chemistry
Physiology
Psychiatry
Radiology
Surgery
  Anesthesiology
  Laryngology and Otology
  Neurological Surgery
  Orthopedic Surgery
  Urology

World Medical Association

HARRY S. GEAR, M.D., APPOINTED SECRETARY GENERAL

Dr. Harry S. Gear, an eminent international medical leader in the field of hygiene and tropical medicine, became Secretary General of the World Medical Association on July 1, 1961. Dr. Gear was formerly Director of Pneumoconiosis Research, Council for Scientific and Industrial Research—Industrial Medicine, in Johannesburg, South Africa.

Of British descent, Dr. Gear received his education at the Universities of Witwatersrand and London; engaged in general practice in London, Rhodesia and South Africa, and had hospital and clinic experience in China, the Middle East and Africa. He is a member of the British Medical Association, the Medical Association of South Africa, and the Royal Society of Tropical Medicine in London.

In military service from 1940 to 1944, Dr. Gear was assigned as Assistant Director of Hygiene, Middle East Force—GHQ, in which post he was responsible for co-ordinating with the war effort the civil medical and health services of all middle eastern countries.

At the international level, Dr. Gear attended the International Health Conference in 1946, was a member and Chairman of the WHO Executive Board and served as Assistant Director General and Consultant of the World Health Organization.

Dr. Gear's awards include: most distinguished graduate medal awarded by the British Medical Association and South African Medical Association; the Ducan Medal in Tropical Medicine and Mentions in Despatches from the Middle East campaign.

He is a member of numerous voluntary organizations, a Fellow of the Royal Statistical Society and Royal Society of Health, and a member of the Royal Institute of International Affairs, London. Dr. Gear is the author of a number of books and monographs in the fields of epidemiology, health statistics, industrial health and medical research. More than 70 of his technical and professional papers have appeared in various medical and scientific journals in Europe, Canada, Africa and internationally.

Dr. Gear is married to the former Joyce Leishman, daughter of the late Lieut.-General Sir William Leishman, F.R.S., noted for his contributions to medicine in the field of leishmaniasis, Leishman's stain, etc. Mrs. Gear was previously a member of the Department of Parasitology of the London School of Tropical Medicine. Dr. and Mrs. Gear have three grown sons.

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OBITUARIES

DR. ALVA B. CHAPMAN, 97, died at his home in Reston, Man., on May 12. Born near Gananoque, Ont., Dr. Chapman graduated from Queen's University Medical School in 1899. One year later he visited relatives in Reston and decided to open a practice there. He retained this practice until his retirement a few years ago.

During World War I he was awarded the Military Cross for bravery while in action in France.

He is survived by his widow.

DR. PERCY B. MacFARLANE, 76, died in Hamilton, Ont., on May 19. Well known as a specialist in ophthalmology and otolaryngology, Dr. MacFarlane had been practising in Hamilton since 1913.

A graduate of the University of Toronto Medical School in 1908, he did postgraduate work at the University of Pennsylvania in 1918 and the University of Vienna in 1924. He was associated with several medical organizations in Canada and the United States; these included the Ontario Provincial Board of Health, the Baltimore Eye, Ear and Throat Hospital and the Hamilton Academy of Medicine.

He was also a life fellow of the American Academy of Ophthalmology and Otolaryngology, past president of the Canadian Ophthalmology Society and a member of the Canadian Otolaryngology Society.

He is survived by his widow, two daughters and two sons, Dr. J. W. MacFarlane of Burlington and Dr. E. B. MacFarlane of Hamilton.

DR. JAMES L. McINTOSH, 68, died May 26, at the Verdun General Hospital, Montreal. A staff member of the hospital since its foundation, Dr. McIntosh graduated from Laval University Medical School in 1918 and established a practice in Ville Emard, Que., in 1921. He served in the Royal Army Medical Corps during World War I.

He is survived by his widow, a son and three daughters.

DR. SARSFIELD M. NAGLE, 82, died May 18, from injuries he received in a car accident in Ottawa, Ont. Well known as a sports enthusiast, Dr. Nagle had played football for Ottawa and McGill Universities; later he was a member of the Ottawa Rowing Club.

Dr. Nagle graduated from McGill University Medical School in 1904. Soon after graduation he opened a practice in Ottawa, and was still practising there at the time of his death. In 1954 he was honoured by the Academy of Medicine for 50 years of service in medicine.

DR. COLIN E. ROSS, 78, retired diagnostic radiologist, died May 7 in Montreal General Hospital. Born in Sudbury, Ont., Dr. Ross was educated at Westmount Academy and McGill University Medical School, where he graduated in 1908. He was awarded certification in diagnostic radiology by the Royal College of Physicians and Surgeons of Canada in 1945.

Dr. Ross interned in the Montreal General Hospital and opened a private practice in 1918, when he began to specialize in radiology. In 1929 he opened his own laboratory in Drummond Medical Building, Montreal, and practised there until his retirement in 1954.

He is survived by his widow and a son and daughter.

DR. THEODORE R. WAUGH, 70, retired professor of pathology at McGill University, died at St. Alban's, Vt., April 23. Dr. Waugh joined McGill University's department of pathology after graduation in 1920 and retired as full professor of pathology in 1955.

He was a diplomate of the American Board of Pathologists and the Association of Pathologists and Bacteriologists, a Fellow of the American College of Pathology and a member of the Clinical Society of Britain and Ireland.

Surviving are his widow and a son.

SIR GEOFFREY JEFFERSON

A Canadian Appreciation

Sir Geoffrey Jefferson, Professor of Neurosurgery, University of Manchester, and Honorary Neurological Surgeon to the Manchester Royal Infirmary, died on January 29, 1961, at the age of 74. He was an international leader in the world of neurological sciences and his passing has been widely noted in the daily and medical press on both sides of the Atlantic. His professional achievements, his writings and collected papers and his scholarship are a matter of record. He was a pioneer of neurological surgery in Great Britain and brought a Department and Chair of Neurosurgery into existence at Manchester. He was Consultant Adviser in Neurosurgery to the British Government during and after World War II. His many honours included a Knighthood and Fellowship in the Royal Society. He travelled extensively and from 1950 to 1960 became a peripatetic ambassador of British Medicine who went about the world of neurology and surgery stimulating and helping and weaving friendships everywhere. For, as well as his other talents, he had a singular genius for evoking the affection of many people, young and old, in all walks of life and wherever he went. The Canadian community of neurosurgeons and neurologists shared closely in this friendship, and the relationship of Sir Geoffrey Jefferson to the Canadian scene is a special one that deserves general appreciation and acknowledgment at this time.

The Canadian story starts in the house of Sir William Osler in Oxford where, as a young man, he was part of that charmed circle who frequented "The Open Arms". He was courting a Canadian lady physician, the daughter of A. C. Flummerfelt of Victoria, B.C., of whom the Oslers were very fond. Upon their engagement, according to Sir Geoffrey, his fiancée received a letter on stationery bordered in black, with Sir William Osler's condolences that she was marrying a surgeon. This, of course, was all part of the Oslerian fun, and the young couple were frequent visitors to No. 13 Norham Gardens in their early married years. Mean-

while, the Jeffersons went out to Victoria, B.C., for a period before 1914, hoping to settle there in a general surgical practice. The outbreak of World War I changed all this and they returned to Britain where his career after the war again took roots in Manchester. He was now back home where his father had been a Lancashire physician and he had been educated at the Manchester Grammar School and the University of Manchester. There he established himself in surgery and then in neurosurgery and from there the stream of scientific and philosophical papers flowed. With his wife and family the home life that was so important to him began to grow, and through it all Lady Jefferson found time to continue medical practice with a special interest in psychiatric problems.

The next major Canadian contact was in World War II. The Jeffersons, Cushings and Penfields had known each other through the Osler-Oxford connection. Between the wars he knew of the work of K. G. McKenzie in Toronto and he watched his old friend, Wilder Penfield, develop the Montreal Neurological Institute. These two centres provided the neurosurgical core of No. I Canadian Neurological Hospital which arrived in England in 1940. Jefferson was now Consultant Adviser in Neurosurgery to the British Emergency Medical Service. He, with the Minister of Health, in the midst of the confusion after Dunkirk, helped to locate this unit on the estate of Lord Camrose at Hackwood Park, Basingstoke. Hackwood House became the central neurological, neurosurgical and psychiatric hospital for the Canadian Army. Jefferson then arranged for its use in the British civilian E.M.S. system as a Head and Spine Centre also. This meant that for the next five years Jefferson became a regular visitor, often for the week-end, to this hospital. His arrival was always invigorating and stimulating and as welcome as a fresh breeze to a becalmed sailor. His philosophical acceptance that we were in for long years of a waiting war, together with his unhurried, witty and wise conversation, often supported our flagging spirits. At this time he was also running his own neurosurgical unit, engaging in difficult administrative problems with the Ministry of Health and E.M.S., and visiting as consultant to the other neurosurgical units throughout Britain. Truly this was a remarkable performance for a man who was not in the best of health. It is even more remarkable when we know that these years were a period of major literary productivity when he published some of his most important scientific and philosophical papers. Furthermore, he had opened his own busy Manchester unit to visitors from the allied Medical Services. It became a mecca for young neurological surgeons who were weary with idleness. There his hospitality of the mind was no less generous than was Lady Jefferson's of the home. Amidst all this he managed to get out to Canada during the war where his visit was as refreshing to Canadians at home as to Canadians in Britain.

These professional and personal bonds between Jefferson and the Canadians were maintained and deepened after the war. In his inimitable way he had made himself part of us as he seemed to make himself part of everyone he encountered. He would turn up at neurological centres in Canada on all his trips like a relative who, when in town, just drops in to say hello. Full of friendship and eager enthusiasm he would want to know what was new and how things were going; and you could be sure he would find out too—penetratingly. At the same time he would give us the latest news and fruits of his travels in Europe or Russia or the Commonwealth or the U.S.A. He would charm our wives and, perhaps most of all, our children because he had that simplicity of excellence and love which attracts a child. He was truly an ambassador in these years, bearing good will among us in Canada and on our behalf to other countries.

In 1950 Jefferson delivered the Donald C. Balfour Lecture in Surgery at the University of Toronto. In 1955 he participated in the second foundation of the Montreal Neurological Institute and the opening of the McConnell Wing. In that year also he attended the B.M.A.-C.M.A. Meeting in Toronto where his guiding genius and discussions illuminated the scientific programs. His humour and good fellowship were highlights of the annual dinner of the Canadian Neurological Society. He was awarded the "Olympic" prize for the best story of the evening and the sight of him, crowned with a chaplet of laurel leaves from the slopes of British Columbia, his eyes shining and twinkling and his impish grin telling everyone what fun it all was, will remain a lyrical memory of a dear friend who enjoyed his fellow man as much as he enjoyed the pursuit of truth, beauty and wisdom. We saw it all once again when in 1959 we went to London, England, for the Canadian Neurological Society meeting with the Society of British Neurological Surgeons and the Association of British Neurologists. There he not only came himself but brought along his daughter and his two sons who are following the family pattern, one in neurology and one in neurosurgery. Mr. Northfield expressed the regrets of all of us that evening that "Lady Jeff" could not be present to make the party complete. We were able on that occasion to elect him to Honorary Membership in the Canadian Neurological Society and in that the C.N.S. was indeed highly honoured. His final visit to Canada was to participate in the opening of the Neurosurgical Unit of the University of Toronto at the Toronto General Hospital on November 8, 1958. He had followed this development closely and, indeed, had sent one of his best young neurosurgeons to join the Toronto team.

The impact of Sir Geoffrey Jefferson's contribution to Canadian neurosurgery and neurology has thus been very direct and very great. He touched some of us very closely and frequently over his last twenty years and he gave generously of his mature wisdom. He touched almost all of us at the C.N.S. meetings where he shone as the scholarly surgeon with deep humanity. Horrax said that neurological surgery as a specialty started with Sir Victor Horsley. The mantle of Horsley descended upon Jefferson who was thinker, scholar and neurosurgeon, a gay and witty companion and a trustworthy friend. The Canadian family of neurosurgeons and neurologists share in the world's loss and will miss Sir Geoffrey Jefferson grievously.

E. H. BOTTERELL
J. A. WALTERS

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PUBLIC HEALTH

SURVEILLANCE REPORT OF EPIDEMIC OR UNUSUAL COMMUNICABLE DISEASES

INFLUENZA

During March, influenza virus A2 was isolated from two patients, one from Lancaster Park, R.C.A.F. Station, Namao, Alta., and the other one from Vilna, Alta. Serological studies on acute and convalescent sera from two patients in the Alberta Military Hospital, Calgary, showed a four-fold rise of complement fixing antibody to influenza A (April 1961).

TYPHOID FEVER

In the course of an examination for sources of shigellosis at the Moscowpetung Reserve, Fort Qu'Appelle, Sask., four *S. paratyphi* carriers have been discovered. Chloramphenicol treatment has been initiated. The family members and contacts of the carriers are being examined and a TAB inoculation program has been started.

Note.—Five cases of paratyphoid fever due to *S. paratyphi B* were reported during February and March at the Moose Woods Indian Reserve, 13 miles south of Saskatoon.

INFECTIOUS HEPATITIS

Five more cases of infectious hepatitis have been reported, 2 from the town of Inuvik, N.W.T., one in the R.C. Hostel and the other case from Arctic Red River. This outbreak began in October 1960 and the total number of cases is now 61.

TETANUS

In Aiyansh, B.C., a death from tetanus has been reported in a non-immunized child following burns sustained in a fall against a stove.

A case of tetanus in a 49-year-old woman has been reported from St. John's, Nfld.

One case of tetanus has been reported in Ontario for the week ended April 29, 1961.

TULAREMIA

One case of tularemia has been reported for the week ended May 6, 1961.

TRICHINOSIS

Three more cases of trichinosis have been reported from the Province of Quebec, one each from Jonquière, Kénogami and Montreal.

One case of trichinosis proved by muscle biopsy has been reported during April in the Abbotsford area of British Columbia. In addition, there were eight suspected cases.

MALARIA

One case of benign tertian malaria has been reported from Duncan, B.C. The patient, aged 32 years, presumably became infected in New Guinea in February 1961, despite antimalarial prophylaxis.

PARALYTIC POLIOMYELITIS

Canada

A provisional total of 906 cases of paralytic poliomyelitis and 74 deaths was reported to the Epidemiology Division in 1960.

Final classifications with 60-day follow-up reports have been received for 92% of cases. Residual paralysis was present in 80% of cases.

The accompanying tables summarize the 1960 poliomyelitis experience in Canada.

PARALYTIC POLIOMYELITIS CASES AND DEATHS, ATTACK RATES PER 100,000 POPULATION AND CASE FATALITY RATES

	Cases	*Rate per 100,000 population*	*Deaths*	*Case fatality rates %*
Canada	906	5.1	74	8.2
Newfoundland	49	10.7	4	8.2
Prince Edward Island	1	1.0	—	—
Nova Scotia	9	1.2	1	11.1
New Brunswick	96	16.0	2	2.1
Quebec	277	5.4	33	11.9
Ontario	39	0.6	2	5.1
Manitoba	13	1.4	1	7.7
Saskatchewan	56	6.1	8	14.3
Alberta	201	15.7	11	5.5
British Columbia	165	10.3	12	7.3

PARALYTIC POLIOMYELITIS CASES BY AGE GROUP, VACCINATION STATUS AND PER CENT DISTRIBUTION

	Vaccination status							
Age groups	*0*	*1*	*2*	*3*	*4+*	*N/K*	*Total*	*Per cent cases*
0 - 4	196	31	31	52	6	3	319	35.4
5 - 9	113	12	22	71	10	3	231	26.6
10 - 19	94	8	6	42	7	5	162	17.9
20+	148	7	12	19	2	1	189	21.0
N/K	—	—	—	—	—	5	5	—
Total	551	58	71	184	25	17	906	100.0
Per cent doses	62.0	6.5	7.9	20.7	2.8	—	100.0	

PARALYTIC POLIOMYELITIS DEATHS BY VACCINATION STATUS IN SPECIFIED AGE GROUPS

	Vaccination Status				
Age groups	0	1	2	3+	*Total*
0 - 4	15	—	3	4	22
5 - 9	5	—	2	5	12
10 - 19	11	—	2	—	13
20+	23	1	1	2	27
Total	54	1	8	11	74
Per cent doses	73.0	1.3	10.8	14.9	100.0

PARALYTIC POLIOMYELITIS VIRUS ISOLATIONS

Poliovirus	*Type I*	*Type III*	*Total*	*Negative*	*Total*
Cases	235.0	169.0	404.0	89.0	493.0
Per cent (1960)	58.2	41.8	100.0	18.0	100.0
Per cent (1959)	88.4	11.6	100.0	—	—

Epidemiology Division, Department of National Health and Welfare.

Ottawa, May 20, 1961.

BOOK REVIEWS

TEXTBOOK OF MEDICINE. 13th ed. Edited by Sir John Conybeare and W. N. Mann. 987 pp. Illust. E. & S. Livingstone Ltd., Edinburgh; The Macmillan Company of Canada Limited, Toronto, 1961. $7.65.

This is the 13th edition of a textbook that first appeared in 1929—in the meantime there have been eight reprints as well. The most notable change from the 12th edition is the increase in size; some 130 pages have been added and there are now 48 illustrations and 40 x-ray plates. These all help to give clarity to the text but have the drawback of making the volume so large that it is now not managed with ease. It is not easy to perceive how the increase in size could have been avoided without injuring the value of the work.

There are now 17 contributors, so that the writing style is not distressingly uniform or monotonous. The editing has been done on a generous scale, some of the sections being almost entirely rewritten. The arrangement is attractive and usually is happily chosen. Thus the physiological normals of blood chemistry estimations are placed on the inside of the covers, which gives them now a fixed and readily accessible abode: the reader is thereby spared labour and loss of time in clearing up particular points.

The "Conybeare" textbook has had a notable popularity since it first came out—especially among medical undergraduates. The reasons for this are numerous and varied but are undoubtedly valid. There is no reason why this new edition will not have, at least, an equal measure of popularity. The probability is that it will be more popular than any of its predecessors.

MEDICAL ALMANAC 1961-62. A compilation of general information, statistics and other data relating to medical care, medical education, medical organizations and literature, incidence of illness and economic aspects of medical practice. Compiled by Peter S. Nagan. 528 pp. W. B. Saunders Company, Philadelphia; McAinsh and Company Limited, Toronto, 1961. $5.00.

An impressive compilation of general information, statistics and other data relating to medical care, medical education, medical organizations and literature, incidence of illness and economic aspects of medical practice has been made in this compact one-volume Almanac. It is designed to be a time-saving tool for physicians, medical administrators, government officials, librarians, editors, writers and all who have need for facts about the medical profession and its various phases.

The eleven major headings are: Organizations and Officials; Publications and Meetings; Education and Research; Vital Statistics; Medical Manpower; Costs of Illness; Hospital Statistics; Medical Finances; Regulations and Schedules (includes narcotics regulations, Selective Service regulations, and service in the Armed Forces); Historical Facts; and Miscellaneous, which includes the principles of ethics of the A.M.A. and a brief coverage of the medical systems of Australia, Great Britain, India, Sweden and the U.S.S.R.

This is a first edition of what, it is hoped, will be a regularly revised reference book.

The author of the preface suggests that the reader "browse" a little through the book, since it will serve not only as a reference source but as a pleasant and rewarding idle-hour companion.

ATLAS OF OBSTETRIC TECHNIC. J. Robert Willson. 304 pp. Illust. The C. V. Mosby Company, St. Louis, Mo., 1961. $14.50.

This excellent textbook fills what has hitherto been a void in obstetric literature. It is written by an eminent authority in the field and he has been ably assisted in the presentation by a gifted medical illustrator.

As the title implies, the book is primarily illustrative. There are 120 individual large-scale drawings that virtually speak for themselves. The first part of each chapter consists of an introductory text and the latter part of illustrations and suitable legends. The text and legends are purposely brief, explicit and cogent.

The author deals with both normal and abnormal obstetrics. In crystal-clear fashion, the mechanisms of labour with accepted operative procedures are described.

It is difficult to find anything to criticize in this book. One might take brief issue with the author regarding his management of breech presentation in so far as Pitocin induction and amniotomy are concerned. Again in the discussion of Cesarean section for placenta previa, many would prefer to do a classical rather than a low section.

The reviewer recommends this book unreservedly to all who are interested in obstetrics, believing that they will find this a most worthwhile addition to their reference libraries.

CLINICAL CHEMISTRY: Principles and Procedures. J. S. Annino. 2nd ed. 348 pp. Illust. J. B. Lippincott Company, Montreal, 1960. $8.00.

This book is intended to be "an aid to students of clinical chemistry on the basic technical level" and there is no question that it fulfils this intention. The technician will find in this, the second edition, an excellent explanation of the basic principles to be employed in clinical quantitative analysis. To the well-qualified clinical chemist the explanatory chapters may seem somewhat elementary and lacking in modern approaches, but they should still be of value, since they present a lucid and well-documented approach to the teaching of the subject. The detailed procedures described in the text should be of use to technician and clinical chemist alike, for they are concisely described, well set out and seemingly unambiguous.

Although it is stated that this volume is not intended to be a reference book of methods, the lack of any detailed discussion of the methods of analysis involving ultraviolet light might be considered by many to be an important omission. As a result, estimation of serum transaminase is described in terms of the older, more tedious, approach, and assay of steroids is limited to a very brief section describing colorimetric methods using only the visible region of the spectrum. Some micromethods are included but there is no section devoted to a discussion of micromethods in general. Such methods are assuming increasing importance in clinical chemistry, even to the extent of replacing some of the older, more established methods and are worthy of more consideration.

The new edition of this text is well bound, printed on good-quality paper in clear and well-set type and has an adequate subject index.

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THE PHYSIOLOGY OF THE MOUTH. 2nd ed. G. Neil Jenkins. 355 pp. Illust. Charles C Thomas, Springfield, Ill., 1960. $9.00.

The aim of this text has been fulfilled. Few if any books on this subject compare in thoroughness with this one. Much of the book is concerned with biochemisty and growth and development of the mouth. The author himself states that this may seem a curious beginning. It would seem more logical to begin with an anatomical description of the many parts of the mouth and their functions.

Although we realize that saliva is an important phenomenon, should it have 52 pages of text? This would appear a little unbalanced, as only 25 pages are given to mastication and deglutition later in the book, while finally, the last chapter is a small one on speech!

Many theories on caries are presented in a good chapter. It would be a useful addition to have a chapter on peridontal disease.

References are exhaustive throughout the text, but one wonders whether this is not overdone in places. The format, illustrations and diagrams are of high calibre.

ANESTHESIA AND THE LAW. American Lecture Series. Carl Edwin Wasmuth. 105 pp. Charles C Thomas, Springfield, Ill., 1961. $5.00.

The author of this volume is well qualified to write on the subject, as he is both anesthesiologist and lawyer.

Part of the book is taken up with a discussion of some basic legal principles which are applicable to all branches of medical practice. Particular attention is paid to the application of these principles in the practice of anesthesia.

Canadian readers should bear in mind that our law is different in some respects from the law in the United States. For example (page 41), the author states that "The surgeon is responsible for the acts of the nurse anesthetist." He talks about the "borrowed-servant doctrine" which would exempt the employer (hospital) from liability for the nurse's negligence. It is doubtful that this doctrine would be applied in Canada.

PSYCHODIAGNOSTISCHES VADEMECUM – Hilfstabellen für den Rorschach Praktiker (A Compendium of Psychodiagnostic Tables for the Practitioner in the Rorschach Test). E. Bohm. 166 pp. Hans Huber, Bern and Stuttgart, 1960. DM 22.80.

This well-known Rorschach writer has completed with singular talent the long awaited, delicate task of compressing into clear, attractive tables all the available diagnostic information concerning the Rorschach test (Continental version). Beginner and experienced practitioner alike will want to keep at their fingertips these tables presenting traditional test factors (scores, ratios), as well as modern extensions from many schools, such as Merei's card 'valences', individual idiosyncratic 'complex' responses, and many other sources of useful *hypotheses*. Special tables are supplied to specify various degrees and types of intelligence, talent and affectivity. A few examples from the wealth and variety of interesting material in this section are the syndromes of 'reality contact', 'autism', 'intuition', 'suggestibility' and 'suicide proneness'. There are tables on different age groups with special problems (e.g., "aggressive children"), on constitutional types, and on all groups and variations of neurotic, psychopathic and psychotic conditions. The diagnostic and prognostic tables for clinical use occupy almost two-thirds of the booklet; the tables on differential diagnosis appearing at the end will be received with special appreciation by the hard-pressed clinician.

Some potential criticisms were recognized by the author. In fact, he states, "It is with some hesitation that I now surrender this booklet to the public." His first problem received a comment in the foreword: "Not *all* sources used here are equally reliable." Although it is not fair to single out this booklet for criticism which applies equally to the majority of Rorschach textbooks, it should be remarked that the 'objective' appearance of the table form of presentation used here is particularly conducive to a short-circuiting of the critical faculty in the beginner. Caution is therefore recommended in the face of the mixture of symptomatic values presented—some verified by research, and the majority of the others entirely hypothetical in character. A second potential source of misuse will also hardly be eliminated by the author's warning: "This book is not and does not attempt to be a 'substitute' for a Rorschach manual." Those with teaching experience will know that, in spite of warnings, these tables will be misused by some in just this way. "But," says Bohm, "should regard for the quack prevent us from offering a possible aid to the able and honest practitioner?"

An English translation of this work would be most desirable. Meanwhile, those working with the Rorschach test, who trust their German, would do well to acquire this book. It is one of those aids which keep repaying the initial investment day by day, and many times over.

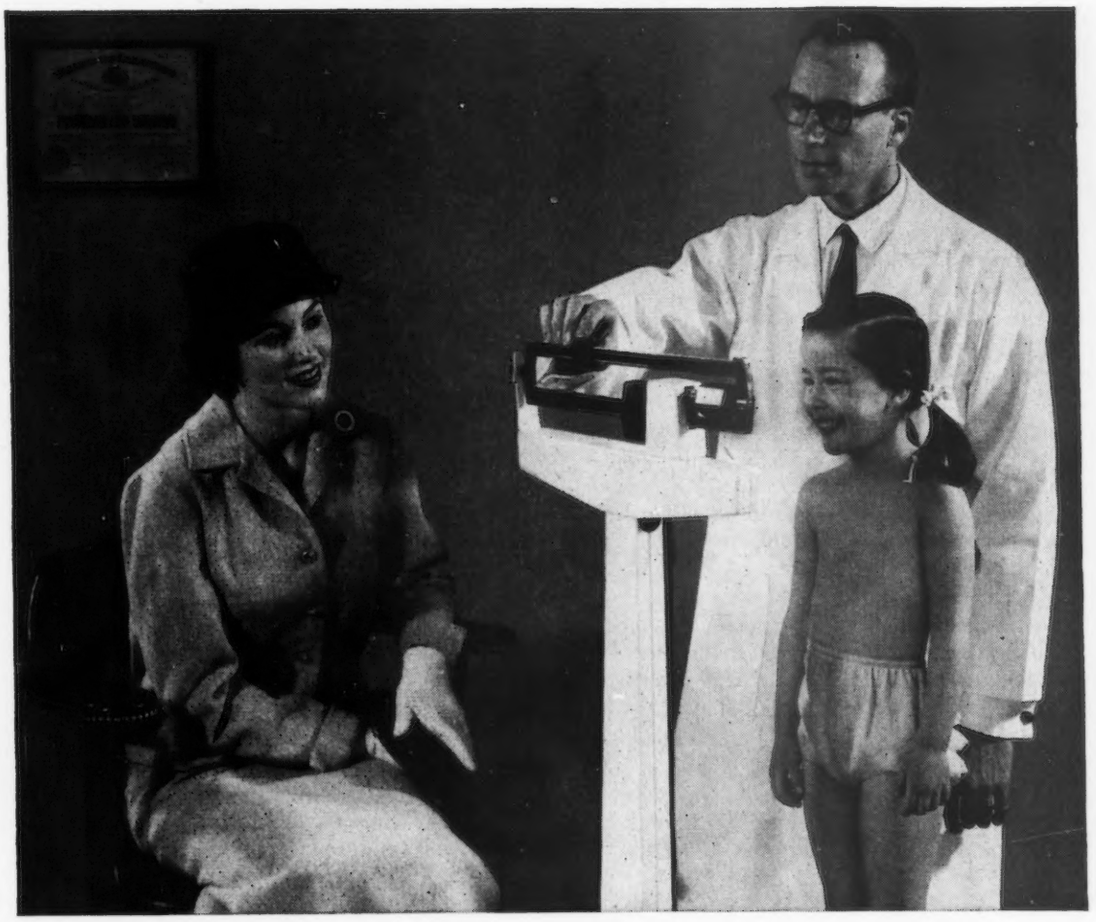
ATLAS OF ANATOMY AND SURGICAL APPROACHES IN ORTHOPEDIC SURGERY. Vol. II. The Lower Extremity. Rodolfo Consentino. 264 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1960. $15.50.

In the preface to this volume, Dr. C. B. Larson states, "The anatomy in this volume is alive because it is complete and clear and the reader can sense the meticulous, tedious work that has made it so." That is one man's opinion, but I am afraid this reviewer does not share Dr. Larson's enthusiasm. Perhaps in all fairness I should say that if my criticisms seem a little harsh, this may be at least partly accounted for by the fact that I have never seemed to get any impressive amount of help from such volumes.

The emphasis here is on anatomy rather than on surgical approaches. The book is essentially a series of photographs with a certain amount of descriptive text. As far as I am concerned, this just does not serve the purpose of anyone who is trying to recall some anatomy from a long way back. It may be of interest to someone who already knows his anatomy to peruse these photographs. In the relatively little space given to surgical approaches, the preoccupation again is with showing anatomical detail, rather than with a running description of an operative procedure as it would ordinarily be performed, and there is no attempt to guide the reader in the selection of an approach for a particular surgical purpose.

As a minor criticism, several grammatical and typographical errors were noted; these may be excused, but they hardly enhance the readability of this book.

(Continued on page 108)



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*Brown, S. S.; Libo, H. W., and Nussbaum, A. H.: Norethandrolone in the Successful Management of Anorexia and "Weight Lag" in Children, Scientific Exhibit presented at the Annual Meeting of the American Academy of Pediatrics, Chicago, Oct. 20-23, 1958.

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(Continued from page 106)

RORSCHACH'S TEST. I. Basic Processes. 3rd ed. Samuel J. Beck, Anne G. Beck, Eugene E. Levitt and Herman B. Molish. 237 pp. Grune & Stratton, Inc., New York; The Ryerson Press, Toronto, 1961. $6.50.

The third edition of this well-known basic text shows only relatively minor differences from the former edition. In collaboration with the three new co-authors, style and structure of the presentation have been revised, resulting in some "new" chapters. The emphasis is still on objective, quantitative aspects of the method as opposed to "the examiner's intuitive free associations to the patient's free associations" and "qualitative judgments" which are practised in some quarters and may be "clinically accurate . . . but . . . are not the Rorschach test" (Beck). Most new additions are intended to clarify the scoring system rather than to change it.

The most important new scoring aid is a list of good and poor forms, of F+ and F− responses; a dimension which, because of its relation "to ego functions . . . is a corner-stone in this test" (Beck). Two hundred clinical psychologists from all over the United States participated in the collection of these examples, creating, as Beck believes, "a broad sample, well representative of experience for the entire United States". Although, as the author himself recognizes, "such a list can never be all inclusive", the advance towards greater objectivity of scoring criteria is not only commendable but a "must of the times" in a 1961 edition of any textbook on the Rorschach test.

Because of the wealth of valuable *basic* information in it, this book is recommended for all serious students and workers of the Rorschach test, regardless of which system of scoring they use.

TUMORS OF THE FEMALE SEX ORGANS. Part 3. Tumors of the Ovary and Fallopian Tube. Arthur T. Hertig and Hazel Gore. 176 pp. Illust. National Academy of Sciences, National Research Council, Washington, D.C., 1961. $1.40.

This is the third part of Fascicle 33, Section IX, of the Atlas of Tumor Pathology. It is published under the auspices of the Armed Forces Institute of Pathology in Washington, D.C., and it maintains the excellent quality of this entire series. This publication deals only with the ovary and Fallopian tube.

The classification of ovarian tumours is simple and practical. No attempt is made to assert that this is the final answer, but it seems to be the most rational approach yet published. The average clinician interested in ovarian tumours will breathe a sigh of relief that some order has arrived from chaos.

The fascicle is well organized and well written, and the gross and microscopic reproductions are outstanding. Also, it is not burdened with a wealth of minor histological detail, and the clinician, who must be a good pathologist but is usually an amateur histologist, can follow the descriptions with ease.

One of the newer concepts of the classification is that dealing with the cystomas. The inclusion of the mucinous and endometrial type in this group will cause some controversy. However, when one can find in one cyst the typical epithelial lining of a serous, mucinous or endometrial cyst, one has to consider a common etiology. Their origin, at least in part, from the germinal epithelium of the ovary, is well presented. However, the authors are rather vague as to whether they consider all solid primary carcinomas of the ovary as of germinal epithelial origin. Also, the successful growth of menstrual endometrium in the abdominal wall is not mentioned, presumably because the manuscript was in press at the time that this was reported.

Another sensible change is inclusion of all gonadal stromal tumours under one heading. In the portion of the fascicle that deals with the Fallopian tube, a rather startling statement is made to the effect that bilateral oophorectomy is the procedure of choice for expectant cure of salpingitis isthmica nodosa. Perhaps this is not what is meant, but very few clinicians would agree with this form of therapy.

In summary, this publication is essential for everyone interested in ovarian and tubal pathology. The authors are to be congratulated on an excellent piece of work. The price also makes this a unique purchase, if one is able to get a copy before demand exceeds the supply.

CLINICS IN ELECTROCARDIOGRAPHY. Dale Groom. 152 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1960. $8.75.

The material in this small book is exactly what its title implies. Certain electrocardiographic patterns are presented as part of a clinical protocol, the tracings are described in detail and the discussion revolves about the electrocardiographic abnormality shown. It is refreshing that the author has the courage in this day to describe the patterns and to reduce to a minimum, for sake of simplicity, the electrophysiological background of each abnormality. In so doing, he does not in any way underestimate the great contribution of the electrophysiologist but he does put in proper perspective the role of earlier physicians who learned to interpret electrocardiograms in terms of pathological changes.

Your reviewer was particularly impressed with the discussion which follows each clinical protocol. It is sound. This discussion enters into the theoretical background of the tracing in sufficient degree to make its mechanism clear. It also reduces the whole situation to the bedside or clinical level. The student or practitioner, for whom the book is intended, is given the chief etiological factors in a given situation, and even a few tips in therapy are included.

The non-specificity of most electrocardiograms is clearly pointed out, as is the fact that the electrocardiogram is to be considered only one piece of evidence in a given clinical situation. Even in connection with various abnormalities of rhythm, the author makes it clear that while the electrocardiogram is diagnostic thereof, the total diagnosis cannot be made from the electrocardiogram alone. In spite of this care, your reviewer cannot help but offer one minor note of criticism. It is his feeling that the student in reading this book will constantly have to recall that, for example, there is no one pattern typical of mitral stenosis, but several patterns including the normal, which are compatible with that clinical entity.

It is a bit confusing and therefore regrettable that the mounting of the limb leads is not done in any one way in the text—nor is the mounting of the limb leads in relation to the precordial leads consistent. The reproductions of the electrocardiograms, the print and the paper are excellent.

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MEDICAL NEWS *in brief*

(Continued from page 94)

FIELD TRIALS OF TRACHOMA VACCINE

Field trials of a vaccine developed against trachoma, the leading cause of blindness in large areas of the world, have shown positive results, according to Dr. J. Thomas Grayston of the United States Naval Medical Research Unit in Taipei, Taiwan. Dr. Grayston reported early results of the tests at a recent conference on The Biology of the Trachoma Agent, sponsored by the New York Academy of Sciences. Drs. Robert L. Woolridge and San-pin Wang collaborated in the study.

In the tests of the vaccine, one group of preschool children was vaccinated, and the rate of trachoma matched against that of an unvaccinated control group. According to Dr. Grayston, the ". . . number of cases that have occurred have been less frequent in the vaccinated groups." The total number of cases, however, is not yet large enough to justify a final conclusion on the value of the vaccine.

The authors also tested the vaccine in human volunteers and monkeys whose eyes were deliberately infected with trachoma. When the vaccine was administered after the infection, the severity of the disease was reduced but when the vaccine was administered prior to infection, it not only failed to protect volunteers against the disease, but appeared to intensify it. Also, it was reported, the larger the dose of vaccine, the more severe the symptoms became. Dr. Grayston attributed this to an "allergic type" of reaction. The "allergic" reaction encountered in experimentally infected volunteers did not occur in vaccinated volunteers exposed to natural infection.

One of the major difficulties faced by research workers attempting to develop a fully effective vaccine is the problem of growing the trachoma virus in cultures. This was accomplished for the first time in 1957, but preparation of the cultures continues to pose difficulties.

According to Dr. Ernest Jawetz of the University of California School of Medicine, laboratory personnel concerned with preparing the cultures, which are grown in eggs, regularly find it impossible to grow the virus. Dr. Jawetz found in his laboratory a decreased susceptibility of eggs to the growth of virus in late summer or early fall seasons, although he said that the time varies in other parts of the world. When the mechanism responsible for the inability to grow the viruses is understood, it may prove to be useful in the development of a wholly effective vaccine.

In attempting to determine the reason for the insusceptibility of eggs to trachoma virus infection Dr. Jawetz found that the trachoma virus can kill chick embryos if it is injected into fertilized, incubating eggs when they are eight days old. If the yolk sac of insusceptible eggs is added to incubating eggs from four hours to four days before the injection of the virus, the death rate among chick embryos will be significantly reduced. This does not happen if the yolk is from susceptible eggs.

The yolk sac is the only part of the insusceptible eggs in which this virus-inhibiting capacity has been found, Dr. Jawetz reported. No agent has thus far been identified as the causative factor.

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In another paper presented at the conference, Dr. L. H. Collier of the Lister Institute of Preventive Medicine, London, England, said that the infectivity of the virus resides in its DNA (deoxyribonucleic acid) particles, which is also the part of the human chromosome believed to carry hereditary characteristics.

A complementary paper presented by Dr. Morris Pollard of the Medical Branch, University of Galveston, pointed out that as the virus reproduces, it goes from a DNA to an RNA (ribonucleic acid) stage, and then finally back to a DNA stage again. While the virus is in the RNA stage, it is not infectious. It resumes its infectivity when it returns to the DNA stage.

Dr. Pollard has been conducting experiments on a variety of drugs to determine which, if any, interfere with virus growth. Most effective thus far has been a drug called tylosin tartrate, which inhibits the growth of the new viruses under conditions of experimental study.

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B.M.A. 1962 PRIZE ESSAY COMPETITION FOR MEDICAL STUDENTS

The British Medical Association announces the 1962 Prize Essay Competition for medical students on the subjects "The Doctor-Patient Relationship in and out of Hospital" or "The Desirability of a Knowledge of the Arts Subjects in the Practice of Medicine". Prizes of £25 will normally be awarded, subject to the number and standard of the entries received. Any student who is a registered member of a medical school in the United Kingdom, the British Commonwealth or the Republic of Ireland is eligible to compete. Entry forms and further particulars may be obtained from The Secretary, British Medical Association, B.M.A. House, Tavistock Square, London, W.C.1.

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POSTGRADUATE COURSE ON EMERGENCIES IN GENERAL PRACTICE

A postgraduate course on "Emergencies in General Practice", sponsored by the Medical Alumni Association of the University of Toronto, will be given at Sunnybrook Hospital, Toronto, on October 11, 12 and 13, 1961. No advance registration is required. Credits will be given members of the College of General Practice on an hour-for-hour basis of actual lecture time.

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THE C. H. MILBURN PRIZE (1961)

The British Medical Association has announced The C. H. Milburn Prize (1961) for an essay or study on a subject of forensic medicine. This prize is of £100 in value. Any medical practitioner registered in the British Commonwealth or the Republic of Ireland is eligible to compete. Entries must consist of original and unpublished material. Preliminary notice of entry is required. Forms and further particulars may be obtained from The Secretary, British Medical Association, B.M.A. House, Tavistock Square, London, W.C.1. The closing date for entries is October 31, 1961.

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CAGED BALL REPLACES DAMAGED HEART VALVE

The caged ball depicted above is lodged inside the heart of a 52-year-old man. It is the first use of a ball-type valve as a total replacement for the mitral valve. The prosthesis was developed at the University of Oregon Medical School by Dr. A. Starr and engineer M. L. Edwards whose work was aided in part by an Oregon Heart Association grant.—*Heart Research Newsletter*, Vol. 6, No. 1, 1961.

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47th ANNUAL CLINICAL CONGRESS: THE AMERICAN COLLEGE OF SURGEONS

More than 11,000 surgeons and physicians from the United States, Canada and many other countries are expected to attend the 47th Annual Clinical Congress of the American College of Surgeons in Chicago, October 2 to 6, 1961. Approximately 1000 doctors will participate in the program which will include nine postgraduate courses, 258 new research reports from medical centres throughout the country, 68 medical motion pictures, 26 ciné clinics, 14 operation telecasts from Billings Hospital of the University of Chicago, and 300 scientific and industrial exhibits. Headquarters of the Congress will be located in the Conrad Hilton Hotel.

Major addresses will be delivered by Dr. Robert M. Zollinger of Ohio State University College of Medicine, the incoming president of the College, who will speak on the subject of "Surgical Tithing"; Dr. Francis D. Moore of Harvard Medical School, who will deliver the annual Baxter Lecture on "The Control of Effective Volume and Tonicity: Body Composition"; and Dr. Preston A. Wade of Cornell University Medical College, who will present the annual Trauma Oration, "The Specialist and The Injured Patient". This year's historic Martin Memorial Lecture will be delivered by Admiral Hyman G. Rickover.

Nine postgraduate courses will be devoted to the following topics: "Preoperative and Postoperative Care"; "Gastrointestinal Disease"; "Diseases of the Liver, Biliary Tract and Pancreas"; "Cardiovascular Surgery"; "Injury of Joints of the Upper Extremity"; "Obstetrics and Gynecology"; "Cancer Chemotherapy"; "Thoracic Surgery"; and "Recent Advances in Pediatric Surgery".

Additional sessions will provide for discussions on "What's New in Surgery"; "Neurological Surgery"; "Gastrointestinal and Biliary Diseases"; "Plastic Surgery"; "Tumours"; "Anes-

thesia and Pulmonary Problems"; "Cardiovascular Surgery"; and "Orthopedic Surgery".

Panel discussions will feature symposia on trauma and cancer, and individual reports will be presented by a broad range of experts on the subjects of thyroid disease, emergency department problems in trauma, facial injuries, skin grafts, head injuries, viral infections in pregnancy, knee joint fractures, duodenal ulcer, diseases of the spleen, cerebrovascular insufficiency and renal tumours.

RESEARCH IN HEMORRHAGIC DISORDERS

Fellowships in the studies of hemorrhagic disorders and research grants in the studies of hemorrhagic disorders are being offered by the National Hemophilia Foundation.

The Foundation is primarily interested in pilot projects of a nature that would not be eligible for N.H.I. grants.

The decision to sponsor this type of research was recently made by the Foundation, acting on the advice of its Medical Advisory Council, headed by Dr. Kenneth M. Brinkhous, Professor of Medicine at the University of North Carolina.

Projects should be submitted to Dr. Martin C. Rosenthal, Medical Adviser, National Hemophilia Foundation, 175 Fifth Avenue, New York 10, N.Y., U.S.A.

KELLOGG FOUNDATION OFFERS $3.75 MILLION TO FINANCE NEW PAHO HEADQUARTERS BUILDING

The Executive Committee of the Pan American Health Organization has recommended the Organization's acceptance of a grant of $3.75 million offered to it by the W. K. Kellogg Foundation of Battle Creek, Michigan.

The grant is being offered to help finance construction of PAHO's permanent headquarters building in Washington.

The Foundation offers the grant with the provision that PAHO's Member Governments appropriate an equal amount to expand and accelerate the Organization's health program in the Americas. PAHO therefore expects to spend some $187,500 annually during the next 20 years that otherwise would be used to repay a long-term loan for the building's construction.

PAHO will use this money to assist governments in expanding their health services in three critical fields: (1) water, (2) nutrition, and (3) education and training.

The Foundation's offer and the Executive Committee's recommendation must now go before PAHO's Directing Council for final approval. The Council meets in Washington from October 3 to 18.

The Bureau's new headquarters will be built on land to be donated by the U.S. Government at 23rd Street and Virginia Avenue, N.W.

The building's cost is estimated at $4.5 million. An international competition is now under way to select the design of the building. Selection and award of the architect's contract is scheduled for early October. Construction is expected to begin some six to nine months later.

The Executive Committee is made up of the representatives of seven American nations who meet on behalf of all the American Republics. Serving on the Committee are Argentina, Brazil, Chile, Colombia, El Salvador, Honduras and the United States.

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ELECTRICAL FAULTS CAN BE FATAL

Perhaps few occupants of rural homes and summer cottages realize that their very lives are imperilled by electrocution and their property threatened with loss by fire because of an improperly grounded electric service. The I.A.E.I. News Bulletin, March 1960, directs attention to this hazard.

One of the sources of danger is ungrounded metallic sewer pipes within a building. These have destructive arcing effects which result when a soil line becomes charged and the path to ground is through plumbing fixtures, such as sinks and bath-tubs, to the water pipes which serve such units.

The destructive arcing path to ground exists wherever the soil line is not bonded to the water piping system. During the past ten years frequent fatalities have occurred because of this fault, particularly on local water systems with drains to cesspools or leaches. Any fault in an ungrounded circuit constitutes an additional hazard.

In one case history, the owner of a cottage on the St. Lawrence River reported that two people in the vicinity of his camp had been electrocuted. "A boy of 10 came in contact with a charged water pipe extending into the water. The boy disappeared into the shallow water."

"The father, seeing his son on the bottom, plunged in, only to be electrocuted himself as he reached down and grabbed his son's body. A pure-bred Labrador retriever also perished when he plunged into the water after the boy."

"An investigation revealed the fact that the father, son and dog were electrocuted. The water pipe was charged with electricity due to a partially bare wire in contact with the metal pump frame, so that the entire waterline was charged with 110 volts."

To safeguard those who might become victims of an electrical fault such as that described, the following information on grounding of electric service is offered.

The electric service entering the home or cottage consists of three wires, a neutral and two at 110 volts to the neutral. The neutral is usually grounded to the cold water line and ground electrodes where it enters the house. If the line is electrically coupled to the complete water carrying system including drains and sinks, then all the water carrying system including the earth outside is at the electrical neutral position. In order for this to exist, non-metallic pipe, if used, must be electrically bypassed. The wiring should be connected in such a way that if a live wire is accidentally shorted to a water pipe, sink, tub, drain, closet, pump, stove, or any other grounded metallic device, the fuse in the circuit will immediately blow and de-energize the service. If any of these devices are ungrounded, and a fault to ground appears, the service will not be de-energized, and the frame of the device will be placed 110 volts above any ground, posing a serious hazard to safety.

For safety around the home or cottage, use only approved bonded-type wiring, making sure that all devices are properly grounded. Outside buried wiring should be properly installed and conform to all requirements of the Provincial Hydro regulations. Checking all mechanical devices to see that vibration does not undo bonding strips should be a periodic must.—G. F. Dowd, *Occup. Health Bull.*, Vol. 16, No. 6, 1961.